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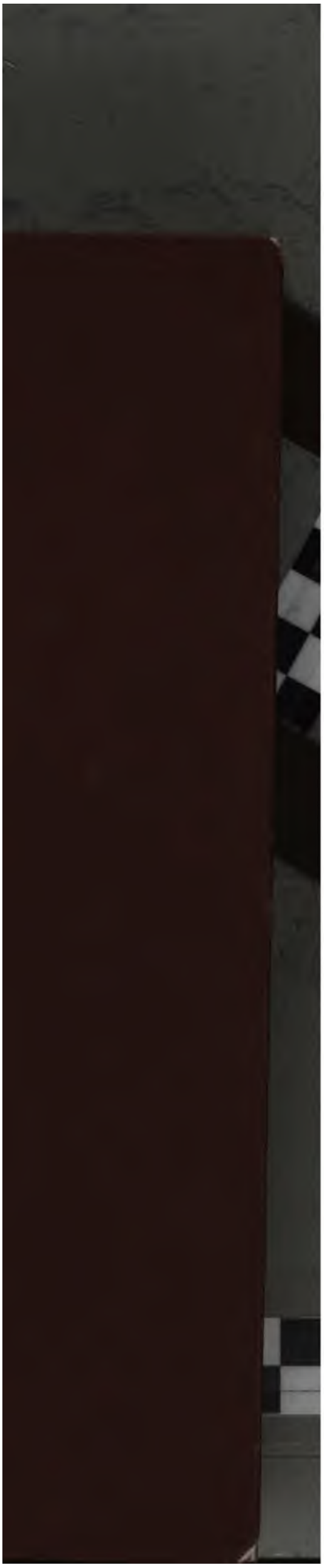

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To face first matter

The School World

A Monthly Magazine of Educational Work and Progress.

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THE TEACHING OF ENGLISH IN SCHOOLS.

By J. H. FOWLER, M.A.
Clifton College.

IT is now more than thirty years since the late Prof. Seeley—in that volume of "Lectures and Essays" which includes his masterly essay on "Roman Imperialism" and two delightful papers on Milton—published an eloquent plea for the greater study of our own language and literature in English schools. "Everywhere but in England, I imagine, the native language makes a prominent part of the educational course." When these words were written in 1870, the education given in English secondary schools, public and private, was preponderatingly classical. But the conflict between natural science and languages for supremacy was already beginning, and the supporters of natural science were proclaiming with a force that had all the attraction of novelty the easy and fallacious antithesis between words and things: "Science is a better education than language, because an education in things must be better than an education in words." Between the two sides in the controversy Prof. Seeley took a middle position. "Classical education," he said in effect, "is not a failure for the small minority who attain such proficiency as to enjoy its best fruits. For them it ceases to be an education in words, and becomes an education in things—in the life and thought of Greece and Rome. But for the average boy who leaves school at fourteen or sixteen it is only a training in dead words brought into no relation with his life. Let us substitute a training in his own language—the language which he has to use whenever he wishes to come into contact with things—and the antithesis between words and things will disappear. Let us, further, substitute English authors for the classical authors that so few boys learn to enjoy, and let us wipe away the reproach from the English nation that it is indifferent to the splendid inheritance of its own literature." The interval of thirty-three years has seen great changes in our secondary schools, but they have not been to any large extent in the direction favoured by Prof. Seeley. Natural science, technical training, modern languages—these have all won a largely increased share of public attention and a largely increased share of the school time-table. Investigation would show, I fear, that the study of our own language and literature had made little headway. "I have come to a school"—a newly-appointed headmaster of a large secondary school wrote to me lately—"in which, from top to bottom, there has been no English literature taught."

Let us begin by acknowledging frankly that the experiment of teaching English has been tried, and abandoned in many, or at least in some, cases, because it did not prove successful. I do not find in this any real cause for discouragement, because it seems to me that the failure has been partly due to difficulties which, though real, are not insuperable, and partly to wrong methods. In grammar there is the difficulty of getting a boy to think about constructions which he uses instinctively because he has learnt them in the act of learning to speak. In literature there is the difficulty that its beauties are things to be felt rather than defined, that æsthetic criticism is apt to degenerate into a peculiarly hateful sort of cant. The effort to avoid this, and the desire to make the study scientific, have led to literature lessons that were lessons in language and history and geography but hardly in literature at all. And, last but not least, the tyranny of our examination system—under which some examiners have set literature papers that did not contain a literary question, and others have set literary questions only to find that the answers were repeated by rote from the text-books—has driven many in the ranks of examiners, teachers, and pupils alike, to the sad conclusion that to make English literature a school subject is the surest way to implant a dislike of it in the minds of the young.

Yet, whatever the difficulties and discouragements may be, the attempt to make literature a real and living force is not one to be lightly abandoned. Modern schemes of education, under which natural science is chiefly directed to practical ends, and languages are mainly studied with a view to commercial or colloquial intercourse, leave the best part of human life without provision. That quickening of the imagination and sympathy, that lifting of the life above gross and sordid aims and cares, which is the best thing that education can give, is best and most directly given through literature. And if through literature, it must be

through our own, or not at all, in most cases. It is idle to suppose that the claims of modern life upon the school curriculum can be ignored. It seems very doubtful whether any reform in classical teaching could materially shorten the time required for such a training in Latin and Greek as will secure for the learner the advantages claimed—and, I think, rightly claimed—for a classical education. The time can only be abridged by the sacrifice of accuracy, and if accuracy goes, the scientific value, the mental discipline, of the study goes with it. And though now and again intuitive sympathy may attain the literary fruit without much preliminary study—as Shakespeare attained to an understanding of the Roman character and Keats to an appreciation of the Greek mythology—this is not commonly the case. I incline strongly to the opinion expressed by Prof. Hardie, in his recent "Lectures on Classical Subjects," that "there can be no short and easy way to the kind of insight which is the scholar's aim." But whatever may be the possibilities in the way of reducing the hours for classics in the face of what another eminent classical professor has elegantly termed "the squeeze," the question is, for many schools, already unimportant. The decree has practically gone forth that for the vast majority of boys in secondary schools there is to be no training in Greek, and for a large proportion no training in Latin. The really urgent thing for those of us who believe with Matthew Arnold and the late Prof. Withers, that the crying need of our schools is for "more literature, more humanity," is that we should fight hard to secure for the English language and literature an honourable place in the schools of the future. We need not ask for a large place: three hours a week in school, and two hours of preparation, might be sufficient—far less time than the minimum required for a profitable study of the classics. Our aim should rather be to make the hours—at least those devoted to the literature—a time of real refreshment for the pupil, an introduction into new "realms of gold" in which he is hereafter to wander at his will.

For the pleasantest part of the study, that part which is to yield the best fruit of all in the end, we need not wait till the pupil is growing into maturity. It may begin from the very first moment—with the reading of fairy tales and "Robinson Crusoe" and Sir Walter Scott. But the training is to be scientific too. First, there must be instruction in the use of the several parts of speech and patient analysing of the simpler forms of sentence. The difficulty already mentioned of getting the child to think about sentences which he uses instinctively must be faced and overcome. Secondly, there must be study of the vocabulary of the English language. The methods of that study will be considered in a later article. It will be enough to say here that there should be the minimum of philology, in the narrower sense of the term, but that words should be traced back to their first meaning and the connection of later uses with the original meaning carefully shown. Everything should be done that can be done to give the pupil that accurate sense of the exact significance of words which is essential to clear ideas and to the formation of any opinions in life that are worth having. Thirdly, there must be training in expression. Here, as indeed in the study of vocabulary also, we may surely ask the man of science to regard us as allies and friends, not rivals or foes. It is only in words that we can express our knowledge of things. Without the power of expression in words how is science at all possible? Scientific professors tell us of the difficulty they find in getting their pupils to express themselves logically and clearly on paper. Even commerce suffers because boys leave school without having acquired the power to write so much as a business letter with lucidity, conciseness, accuracy, and courtesy. We may prefer to advocate the English essay because we believe that it is possible to encourage observation and thought and self-expression by its means, to develop all that is intellectually best in the learner. But, if we are compelled to fall back on humbler ideals and to take the point of view of practical utility, we can still maintain that no part of the school curriculum will better repay attention than this.

Finally, we come back to the use of literature as literature with which we began. Can we do anything better for the after-life of our pupils—their whole life, mental, moral, and spiritual—than lead them to "the best that has been thought expressed in the best way?" The modern deluge of printed matter is soon to descend upon them—nay, it is upon them before they quit the school. If they are not to be swept away by it, if they are to keep solid foothold, "Discerning the bad by the rule of the good," the school must help them. With all our boast of patriotism, how sadly indifferent we are to our best national heritage! We "are sprung of Earth's first blood, have titles manifold," not the least of our titles being that we "speak the tongue that Shakespeare spake." And yet, of the thousands of England's sons and daughters who year by year pass out from her schools, let us remember with shame how many there are—

> Who have hardly heard
> Sound of her loftiest names, or any word
> Of all that hath in gold been said and sung,
> Since him of April heart and morning tongue,
> Her ageless singing-bird.

IT is extremely easy for a political speaker, or a city magnate, or a military reformer, or an irresponsible writer, to proclaim that the schoolmaster must mend his ways forthwith, give up this pointless Latin of his, and teach his pupils the English language *thoroughly*—with much emphasis on the "thoroughly," but it is quite another thing for the schoolmaster to obey our magnificent directions. For the plain, simple, unsurmountable fact is this, that no one knows how to teach English as in our vague way we critics imagine it taught; that no working schoolmaster alive can possibly give the thing the concentrated attention, the experimental years necessary for its development; that it is worth nobody's while; and that (except in a vein of exalted self-sacrifice) it will probably not be worth anyone's while to do so for many years, unless some New Republicans conspire to make it so.—H. G. Wells in "Mankind in the Making" (Chapman and Hall).

ART INSTRUCTION IN SCHOOLS.

By ARCHIBALD H. CHRISTIE.

Inspector of Art Schools and Classes, L.C.C. Technical Education Board.

I.—AIMS.

AFTER a long period of obscure vicissitudes, the study of art has definitely assumed a remarkable position in schools. From being regarded as of trivial importance, an extra touch of refinement involving an extra fee, it has received universal recognition as a desirable element in education, and is regularly taught in all schools of any pretensions by special masters in class-rooms built and equipped for this work alone. But in spite of, or perhaps in consequence of, much apparent prosperity, our methods of dealing with elementary art instruction require more serious attention than they at present receive, not only in the interests of those pupils who acquire their whole stock of information on the subject at school, but also of those who are laying the foundations upon which future training for occupations requiring artistic knowledge is to be erected. It is, moreover, a matter upon which those interested in elementary education as a whole would do well to ascertain the views of specialists engaged in advanced art-teaching, in order that misunderstandings might be cleared up, and that the work should form a useful introduction to special studies to be afterwards undertaken. For art teachers are vitally interested in the preliminary education of pupils who will in due course attend their classes, and are, in consequence of their wider experience of aims and methods, more competent to discuss all phases of instruction than the teachers upon whom the task of arranging the course in a school usually falls.

It must be evident to everyone having experience of the work done in school art-classes that even in the best it is capable of extension in many directions at present neglected, whilst in the majority it has by no means attained anything like an adequate development. This unsatisfactory state of things is in no wise due to lack of energy, of good intentions, or indeed of ability on the part of the teachers, but is the natural outcome of a curiously artificial view of art, based upon a superficial acquaintance with it, which has become traditional in schools. It is equally certain that real progress will never result from the adoption of novel exercises or more convenient apparatus—the procedure customary when misgivings as to efficiency arise. The only possible road to simplicity and completeness of instruction lies in a thorough comprehension of the result aimed at, and careful selection of the most direct methods of attaining this. The possibility of using the classes more completely is little understood by those who frame the course of instruction. It is but seldom that the selected exercises give the impression of forming a system of well-thought-out steps in the acquisition of a valuable elementary knowledge of art. The course of study usually consists of a series of unconnected exercises in drawing, the value of which is often measured solely by the amount of assistance that they afford to the work of other classes. The practice in drawing and training of observation obtained by filling "nature-study" note-books, drawing from geometrical models, and the like, is no doubt a valuable help to the art class, but if this work is made the end to which the instruction is directed, drawing becomes merely an adjunct to science-teaching, cut adrift from all educational developments peculiar to itself. It is only, however, by putting drawing to such purposes that the masters of many schools find a means by which what they term "art" can be made a useful study. These authorities, having a very limited idea of the real scope of the work, would be unable to find a place for it in their schools upon any other terms.

Elementary art-instruction, as at present carried on, is indeed wofully incomplete; its whole bearing is obscure, its most important aspect ignored. The view commonly held cuts off all who do not afterwards enter special schools from knowledge that might exert a good influence upon their mental attitude towards art-work in after-life, and only pays attention to the cultivation of a certain amount of ability in drawing which, if not completely subordinated to science, has no practical bearing whatever. Drawing is but a method of expressing observations and ideas, and is in a manner analogous to writing, to which it has often been compared. No one would think of confining the study of literature to exercises in penmanship, but such a restriction affords a by no means far-fetched illustration of the measure of art instruction often provided.

The fact that the *technique* of drawing presents difficulties is no reason for allowing that all the other essentials of an art education should be neglected or postponed. Insistence upon the acquisition of technical ability as a necessary preparation is a plausible view, but one that may be very easily pushed too far. It has a tendency to set false ideals before the pupils, and to engender wrong habits of mind. The technical difficulties of drawing can be largely overcome quite *unconsciously*, if interesting objects are studied. These are in themselves an incentive to good workmanship; if young pupils are encouraged to draw things that they admire, they will take almost endless pains to do themselves credit and their work full justice. Commendation of accurate observation and neatness of work, and a vigorous suppression of all conventional treatment or mannerism, with an occasional lesson devoted to some special difficulty, will be found sufficient by the teacher who knows how to make drawing properly subordinate to the essential work of his class.

It is interesting to compare the treatment of art in schools with the treatment of literature. The study of literature is not confined to the acquisition of the power of reading and writing for the purpose of gaining scientific information, nor its

practice entirely subordinate to such ends; it is carried to extraordinary lengths purely for its own sake. The importance of some acquaintance with our national literary masterpieces is insisted upon. Specimens of the works of writers of all periods are completely studied, and questions not relating to the language, history and composition of their works alone, but also having regard to the meaning of the subject-matter, are actively discussed. But can it be said that a pupil in an ordinary school art-class is introduced to anything that might form the groundwork of an intelligent knowledge of our national art work, as it is conceivable that the school study of great authors might ripen into a proper regard for literature?

Pessimistic observers of our national shortcomings in relation to art work are wont to look upon us as a people deficient in some particular bump, the absence of which renders all right appreciation of it impossible. But a system of education that, while it acknowledges the benefits that may be derived from the study of the subject by the community, gives instead a garbled, tediously lifeless version of it, must surely take some share of the responsibility for the degeneration of our national artistic susceptibilities. The pupils in school drawing-classes are of an age that is particularly impressionable to much of the finest art-work. A host of objects illustrating the history of art, ships, castles, churches, shields, of arms, flags, and so forth, excite their interest to a wonderful degree. The gaily-coloured pattern-work, fine lettering, heraldry, &c. (see Figs. 1, 2 and 3), used by the old art-workers never fail to fill them with a desire to design and draw such things for themselves out of sheer admiration. Instruction that takes account of this instinctive delight and guides it through a general survey of a series of fine examples appears a more rational method of training the latent artistic activities that everyone possesses than the suppression of such aspirations as unworthy of notice beyond the kindergarten stage.

It is often denied that it is the function of a school drawing-class to venture into what is styled special teaching. It is contended that an elementary art class conducted in a school as part of a general education entails quite a different view of the subject from that required by the elementary class of an art school. But this is certainly not the case. A young student of art and the art he studies are precisely similar in both, and the course of elementary work should be exactly the same wherever it is carried on.

The student commencing at the special school will probably devote more time to the subject, and his progress will rapidly arrive at the point where specialisation really begins; but his early studies aim at arousing and developing the same faculties that should be cultivated in the school class-room.

The establishment of some sound preliminary study with a definite artistic aim would be of great assistance to the work of art and technical schools. Much time is wasted by going over exercises with which the pupils might quite well have been already thoroughly conversant; indeed, the progress of a student who has had no previous instruction is frequently more rapid than that of one who has laboriously acquired the erroneous and incomplete conception of his work current in the school classes. Pupils arriving fresh from school have never any idea of what is to form the subject-matter of their studies. They are not only not familiar with any works of art, but they are wholly unaware that there is a tradition in every branch of it that must be studied and mastered before original work of any kind can be undertaken. They have usually a vague notion that an art-worker does everything out of his head. A properly developed school class would open up the traditions of art by ex-

FIG. 1.—Late XVth Century Italian Drug Bottle. (Victoria and Albert Museum.)

hibiting examples of all kinds of art work to the pupils in order that their own observation and practice might have the advantage of familiarity with the principles and methods of the best work from the first, in the same way that their literary knowledge is founded upon an examination of the great writers. The examples that they first come into contact with will impress them most fully, and if great care be taken that they encounter none but the best they will rapidly acquire a canon of taste that will prove of lifelong value.

The want of a proper understanding of the real nature of art work has led to the stifling of the work in many schools; it has become hedged round with difficulties and reservations until it has almost ceased to be recognisable to the uninitiated, whose doubts as to the value of much of the work done are always met with the declaration "that

school art is different from other art"—a fact that is most incontestably true. And so the "freehand drawing" from absurd copies goes on, drawings from geometrical "models" are still ground out, and "light and shade" from casts, invented specially for this purpose only, is steadily done. These exercises, with the addition of some "nature-study" drawing, and perhaps some perfunctory designing, are often the sum total of the work. Pupils engage in a particular exercise until they arrive at a certain degree of expertness, when another of a different character is set before them; the relationship of one exercise to the other, or their places in the whole course, are unintelligible to teacher and pupil alike. The word "drawing" is never heard without qualification; some such term as "model," "blackboard," "free-hand," or "free-arm," is always affixed to describe evolutions in which the pupils are constantly and laboriously acquiring dexterity—or even ambidexterity! These exercises have a special literature of their own; a whole library of books has appeared devoted to fads and methods of little importance. There are volumes that explain all these processes of "model" drawing so fully that models are no longer requisite, and the rising flood of nature-study cards and copies threatens soon to enable teachers to get on very well without Nature herself.

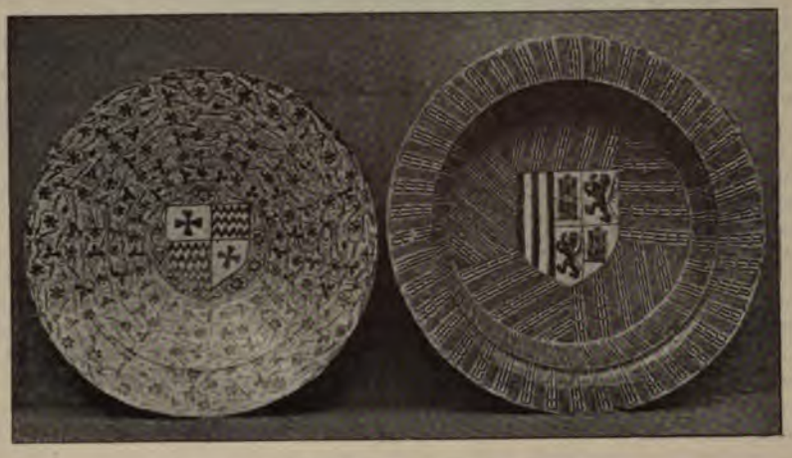

FIG. 2.—Two XVth Century Hispano-Moresque Plates.
(Victoria and Albert Museum.)

FIG. 3.—Two XVIth Century Rhodian Plates.
(Victoria and Albert Museum.)

In the only type of class that professes to teach art from a practical point of view the use of drawing in various professions is recognised, and pupils are taken a considerable distance in all sorts of strictly technical drawing. Classes are conducted in building construction and machine drawing, designing for wall papers and fabrics, modelling, and a variety of other things some of which certainly trespass upon the work of technical schools. It is the business of the technical school to supplement general knowledge by the practical development of some subject that the student has chosen as his vocation. If students are allowed to pass over their preliminary general education in order that they may devote themselves to special work, the deficiency must either be made up by going back to the beginning in the higher school, a process that is always energetically resented, or a most important part of their training must be wholly omitted. As a matter of fact, these schools do not in reality advance the study of art-work any more than those that consider it outside their province.

Much of the good work done in girls' schools, where a liberal view of the study of art is often held, is qualified by the absence of any strong directing purpose. The needlework classes form a magnificent field for practical art-work; they are distinguished as being the only craft classes that can be legitimately held in schools. But girls are never introduced to the historical traditions of embroidery designing, or fired with any pride in or emulation of, the masterpieces of this art in which our countrywomen were at one time the most famous workers. Needlework is sharply sub-divided into plain-sewing and "art-needlework" classes; in the latter little is done beyond the working of designs purchased in shops. Pupils might easily be required to decorate some of their plain work with designs of their own, based upon carefully selected drawings or photographs of fine traditional patterns.

All the soullessly uninteresting apparatus of the school drawing-class, the freehand copies and diagrams, the flabby casts, the models, and the rest, might well be replaced by photographs, drawings, prints, and casts of the best art-work, not necessarily great painting, sculpture, and architecture—although these should have their place—but the finest things that everyone may come across if they are taught to look for them. The forms and appearance of buildings of various periods and uses, of furniture, of all kinds of metal work, and generally of all the beautiful things that a cultured person takes notice of and enjoys, can quite well be brought within the knowledge of every boy and girl at school to their profit and entertainment as well. The selection of the examples would not be difficult; the great things of every branch of art are well known. As a dozen great poets and painters have produced, say, a score of poems and pictures that are known to all the world as the finest we have, so the masterpieces of building, carving, metal-working, engraving, printing, illuminating, weaving, &c., may all be known to those who care to seek for them. All true knowledge of art must commence with an examination of the work that sets it before us, and even the most elementary art education is without right aim if it takes no cognisance of this work. A rearrangement of methods and materials directed in a simple and reasonable way towards this object would place the instruction in a much more intelligible position than that which it now occupies. Many of the exercises that now lack point or deal with mechanical problems only would gain an effectiveness far beyond that which has necessitated their retention in the present system. Freehand copying, cast work, and all the lifeless drudgery of the drawing class would acquire a new life and meaning if employed in the best interests of art, interests the importance of which grow ever more increasingly imperative.

FORMATION AND MANAGEMENT OF A SCHOOL LIBRARY.

By the REV. J. M. LUPTON, M.A.
Assistant-master and Librarian in Marlborough College.

FEW, probably, of the readers of this article will be in the happy position of having to start a school library with unlimited space, unlimited funds, and unrestricted choice of books. We have most of us to administer a library already started and still growing, with a very limited sum to spend on books; and the problem for us is not so much, What is the ideal school library? as, What is the best I can do with the material at my disposal, and under the conditions in which I have to work? If, therefore, I seem sometimes to suggest an ideal state of things, it is with full consciousness of the limitations of the actual situation in which we most of us find ourselves.

What should a school library aim at, is a question on the answer to which very much of its efficiency depends. In all probability the library will have to be to some extent a compromise, fulfilling more or less completely diverse aims.

In the first place, it will be a reference library of books which both boys and masters may need to consult. I say "and masters," because I am assuming that they will have access to it as well as the boys.

This is the most essential part of the library, its core or nucleus, and this department should be jealously kept up to date—at all events, in those branches of study with which the school is more immediately concerned. This is, in some ways, a difficult task. In some departments of study progress is being made rapidly, and the authority of to-day is out of date to-morrow. It is by no means easy for one man whose tastes lie specially in one or two directions to keep in touch with the most recent developments in branches that lie outside his special sphere. This difficulty may be avoided by having a "Library Committee" on which teachers and students of other subjects are represented.

Here a practical difficulty arises. One of the committee recommends, let us say, a new book on astronomy, praising it enthusiastically as far superior to anything yet written. The librarian will have to arrive at some sort of estimate as to whether the book in question is really so far better than anything in the library already that it is imperative to get it; and if so, whether its claims on his limited balance outweigh those of other books whose cause is pleaded with equal warmth. Moreover, he should be able to judge to some degree whether this new authority is likely to hold the field for long, or whether it will in turn be speedily superseded. To do all this successfully is given to few. Most of us, I suspect, make many mistakes, and know only too well the feeling of diving deep into the library fund to buy some new and expensive work, only to find that it is already out of date in a few years, and that its sale price is only a fraction of what it cost.

But it may be objected that the effort to keep abreast of the times even in a few departments of school study is unnecessary, and that it does not hurt boys to refer them to books which are slightly out of date. There is truth in this objection, and, with certain classes of books, it is of weight. Gibbon and Macaulay will long continue to be read, even if later researches have invalidated some of their conclusions. But, from another point of view, I think the effort is well worth making. It is very stimulating to a boy to find that progress is still being made in the subject he himself is learning. To feel himself to be in some sort a potential discoverer is an incentive, and the sight of new books on what he had perhaps fancied to be worn-out subjects is an intellectual spur. It is good for his teacher also to feel that he has not learnt all there is to be learnt even in the subjects in which he took his degree. He too may feel that, even in the grammar of a dead language, fuller knowledge may yet be attained, and that even

common subjects have not yet yielded up all their secrets. I would urge, therefore, that every effort should be made to keep up this side of the school library in a high state of efficiency, although to do so requires trouble and expense. The reference department will include the chief books on the subjects taught in the school, whether divinity, classics, languages, mathematics, science, history, or what not.

But a school library has another purpose to serve than to provide teachers and pupils with the necessary implements for their daily work. It has also a great formative influence; it is one of the greatest powers for education and culture in a school; and this is by no means its least important aspect. Many of us can look back with affectionate longing to hours spent in some corner of a school library, when the scent of limes was in the air, and the click of distant cricketers came in through the open window, as we read of Dante and Beatrice, or Faust and Margaret, or the Cid, while our heart was stirred to noble thoughts, and rosy visions of what life might have in store for us floated before our minds. The memory of those hours has sweetened many a day of drudgery, thrown a light on many a dull path of routine, and opened an unexpected door of sympathy with many a boy whom the ordinary school subjects failed to quicken. To do such a service as this for our own boys in our turn is one of the most attractive parts of a school librarian's work, but one about which it is hardest to give written rules. The smile of pleasure which lights up his face when we have given a boy just the right book at the right moment repays one for many an hour of routine cataloguing and making lists. But the opportunity does not always come. To seize it when it does, one must know both the boys and the books, and must care for them both. But such moments are rare. The commoner lot is to be constantly lending a hand to the boy who comes to one to ask, "Please, sir, where can I find a book on geography? We've got to do an essay on 'Is the Caucasian played out'?" or to be ready with assistance to the colleague who has taken a sudden fancy for exploring the knowledge of fractions possessed by the ancient Egyptians.

The school library, too, has not only to supply a demand—often of a various and very unexpected kind—it has also to create it, to help to foster in boys a love of good letters for their own sake. Here, again, is the librarian's opportunity. He learns accidentally that Jones has betrayed an interest in stained glass, or architecture, or ancient navigation, or field plants, or what not. Knowing the habits of Jones, the librarian puts a book on the subject some wet half-holiday afternoon where it will meet—and perhaps arrest—his wandering eye. Here is scope for books of the most varied description. Anything and everything which may profitably engage a boy's attention may come in useful some day. Travels, *belles lettres*, architecture, heraldry, early printed books (an Elzevir or a Plantin or two may be invaluable), old sporting books, good fiction, military history, books on mechanism of all kinds—it does not much matter what it is: a use will be found for it some day, if you know where to put your hand on the book at the critical moment. There are only three classes of books for which I would enter a special plea:—

(1) Poetry. Boys are shy of reading poetry. But there are some boys who will read a good deal of really hard poetry, if it lies handy to their reach, and they are not bothered to read it by any zealous person. And what a boy reads quietly like that for himself is of enormous value.

(2) Travels. These books do not appeal to every boy, but they indicate a healthy taste, which it is well to encourage.

(3) Books about the locality where the school is situated, and the history of the school and its famous old boys. These are often scarce and valuable, and they should be secured from time to time as opportunity offers.

MANAGEMENT OF THE LIBRARY.

Having thus considered the aims of the school library, it remains to say something of its management. Here we are confronted by the question, "Are books to be taken out?" The question is discussed from time to time in the newspapers *à propos* of the University Library at Cambridge, or some similar institution, and the main arguments are probably familiar to the reader. In a school library I think we must be prepared for both. Certain books, labelled "Reference," will be available for use only in the room. The rule will be broken by both boys and masters; but it should be kept as far as possible. Special cases which may arise can be dealt with as they crop up. All dictionaries, commentaries, standard authorities, and new books, would come under this head.

Other books, I think, we must be prepared to lend. We shall lose them, they will deteriorate in the careless "hugger-mugger" of a boys' study, they will cause us trouble to enter, and endless trouble to recover; but I am convinced that it is the right course, unless we act on the principle that boys were made for the library, and not the library for boys. A boy will often sit down after his football and read for an hour or more in just the kind of book you want him to read, if it is in his study and ready to his hand (and more especially if he has a copy of Greek iambics to show up after tea); whereas, if he had to go to a library to read, he would prefer to stay where he was, and let the charms of the *Strand Magazine* and the claims of his copy of verses fight it out somewhere at the back of his conscience.

In practice, this question is often settled by the co-existence of several libraries in the same school, At Eton, for instance, there is the "Fellows' Library" open to the assistant-masters, full information about which will be found in Mr. Thackeray's monograph, reprinted from *Notes and Queries* (Eton, Williams, 1881); the "Boys' Library," an excellent and ever-growing collection; and the various house-libraries. An arrangement like this makes it possible to differentiate books

to some extent into classes—at the cost, of course, of much duplication and overlapping. The arrangements for lending and circulating can be made very elastic in a house-library which is confined to boys living under one roof. If an important work of reference is not on the shelves, it can easily be run to earth in some one's study. Moreover, the school library can then be administered more rigidly, and the privilege of borrowing be considerably restricted, *e.g.*, by only extending it to books of a certain class, and confining the privilege to the senior Forms.

FINANCE.—The subject of finance is, to some extent, settled for most of us by an outside authority. We know to an inch the amount of our cloth, and must cut accordingly. After some years' experience of his own library, the librarian should be able to form a fairly correct estimate of the annual percentage to be set apart for binding, repairs, and up-keep generally. This will vary enormously in different libraries according as they are, or are not, circulating libraries; as to whether the library is used as a preparation-room, lighted by gas, warmed by hot water or steam, and so forth. In the library with which I am at present concerned, it amounts to nearly 50 per cent., but then the room is warmed by hot water and lighted by gas (which dries the natural moisture out of the bindings, and causes them to perish rapidly); it is used three or four times a day as a preparation-room by some sixty boys (who extend very hard usage to the books which are in constant use); and it possesses many books not recently bound, which require constant looking after to keep them in condition. I should imagine that in a new library, lighted by electricity and warmed by an open fire, the binding bill would be relatively trifling—especially if it were purely a reference library.

Having set on one side the proportion which experience has shown to be necessary for up-keep, the librarian will naturally devote the rest (*minus* a margin) to the purchase of new books, as far as his normal income will allow. I say "minus a margin," for in libraries, as in other matters, the unexpected sometimes happens. Perhaps it is a chance of an old book, for which one has been on the look-out, or there is a copy of an Encyclopædia to be got for £13 13s. cash down, which would cost more if bought in the usual way, or the most expensive bindings in the library conspire to give way at the same moment.

CATALOGUING.—The question of cataloguing is a vexed question about which I shall say little. Perhaps if I had to start a new library I should begin a card catalogue. As it is, I have inherited a printed catalogue and a MS. shelf-catalogue, and there only remains the task of keeping both up to date. You can hardly multiply cross references too much: a boy has often the very vaguest idea of what he is to look for. And "subjects" are at least as useful titles to a boy as "authors." The catalogue must be made of the strongest and most durable materials available in order to stand the inevitable roughness of boy users.

A few hints in conclusion may be found useful.

(1) If the library is purely for reference, each shelf must so far as possible be kept exactly full, so that it may be seen at a glance when books are missing. This is not conducive to the most orderly arrangement of books, and it means one of two things when a new book is added. Either (*a*) the new book is put into its appropriate place at once, and some other book displaced to make way for it—which involves a good deal of re-cataloguing—or (*b*) new books get all herded together, irrespective of classification.

In lending-libraries a system of wooden blocks to put in the place of books taken out has been found useful. But in spite of all precautions books will occasionally disappear and leave no trace behind. Sometimes they are anonymously returned.

(2) There is a source of income which I have not mentioned—the generous donor. He is much to be encouraged; but he occasionally offers unsuitable books, and has to be tactfully told as much. It is a great mistake to let books be "dumped down" on a library. But a patriotic old member of the school is often invaluable in tracking down and presenting books relating to the school and its past history.

(3) If there is a "Library Committee," have some representatives from the school on it. This helps the authorities to keep in touch with school opinion and wants, interests the boys in books, and gives them an insight into the management of a library. Moreover, if your colleagues are in the habit of borrowing books, a boy will take the keenest delight in keeping offenders up to time, and save you much trouble and some friction.

(4) Try to arrange the books you want boys to read in the conspicuous places. They will not trouble to take down "Tom Brown" itself, if it is on the top shelf of an inaccessible press. And remember what a difference a little change makes. Put "Esmond" where they have been used to seeing Toup's "Longinus," and you will probably set a boy reading Thackeray. Boys want ideas putting into their heads. This plan is not ideal, but it is practical.

(5) Biographies are often pressed on boys from the pulpit, and elsewhere. Do not be persuaded into buying many. Few boys ever look at them.

(6) Boys want "realien" of all sorts. You can hardly have too many maps, atlases, plans, coins, pictures of men in armour, diagrams, models of ships, &c., to illustrate their reading.

(7) Keep a *quiet* look-out for books which may lead to mischief. Withdraw them temporarily into a locked cupboard till the boy with the diseased mind has gone. They may then safely emerge again, and the dust will collect on them undisturbed for another tale of years.

(8) The following references may be found useful:—

Article on St. Paul's School Library, by J. H. Lupton. *Notes and Queries*, 6th S. I., June 5th, '80, p. 449. A list of sixteen grammar-school libraries, of which catalogues have been published, *ibid.*, June 19th, '80, p. 492.

Eton College Library, articles on, by F. St. J. Thackeray. Sixteen instalments ranging between 6th S. III., Feb. 5th, '81, p. 101, and *ibid.*, IV., Sept. 10th, '81, p. 205.

St. Paul's School Library, additional note on, by J. H. Lupton. *Notes and Queries*, 6th S. X., Nov. 29th, '84, p. 423.

HISTORY IN PUBLIC EXAMINATIONS.

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I.

THE importance of history as an instrument of education is being recognised more and more fully as year succeeds year. Only a short time ago history was slighted as "fiction grown to maturity," and, on Walpole's authority, we were told that it is "not worth studying, for we know that it must be false." In elementary schools it remained an optional subject till 1900, and it was so unpopular that in London only four per cent. of the children in the schools took it as a class subject. In secondary schools it was relegated to a subordinate place, and was usually taught by someone who had nothing else to do, or could do nothing else. Even at the universities scholarships and fellowships long lay beyond its reach. Now, however, all is changed. History occupies an honoured place in the curricula of all schools wherein the modern spirit moves. The universities and other public teaching and examining bodies give it a prominence second to that of no other subject in their syllabuses. Herbart has made it the centre and heart of his peculiarly interesting educational system. Many monographs on methods of teaching it have recently appeared, and they all bear witness to the rapid increase of the recognition of its worth.

And there is no doubt that it *is* worth more than it used to be. Formerly it was regarded as a branch of mere elegant literature. The prime aim of the historian seemed to be to write an interesting narrative and to polish his periods. Absolute veracity was a secondary consideration. There may have been doubts as to the authority for the stories of Alfred and the cakes, of Canute and the waves, of Henry I. and the smile, of Edward I. and the poison, and of Bruce and the spider; but the anecdotes were far too good to leave out. The larger histories, moreover, in addition to being literary in their aim, were often openly partisan in their spirit. There is no doubt as to the political prepossessions of Hume or Alison: their histories are Tory pamphlets. On the other side, Macaulay and Hallam are revealed, in spite of their superior caution, as unmistakable Whig special pleaders. The great histories of the present time, such as Gardiner's "Stuart Period" and the "Cambridge Modern History," if they lack the charm and piquancy of their predecessors, are rigid in their accuracy and severe in their impartiality. And the school text-books which are extracted from them are marked by the same admirable features. It has, in fact, been recognised that—to use Prof. Bury's words—"history is a science, no less and no more." Scholars approach its problems in the scientific spirit and apply to their solution the scientific method. Sources are diligently sought for and critically examined. Nothing is taken for granted; all things are tried; the good, so far as it can be laid hold of, is held fast. Hence it is evident that history is to-day a much more effective instrument of education than it has ever been before: it has earned the wider recognition which it has received.

But, though the value and importance of history in education are generally admitted, there is by no means the same unanimity as to the precise place which history should occupy in the educational system. Very divergent views are held as to what portions of history should be taught, as to the order in which they should be taught, as to methods of instruction, and as to the aim which the teacher should keep before him in his teaching. Probably no two teachers agree in their opinions on all these points; so that, if practice were free to follow theory, we should have in the secondary schools of the country infinite and most interesting diversity in the teaching of history. But practice is not free. For better or for worse, the whole structure of secondary education in England is bound about the feet of public examinations. Olympian Boards and oracular Syndicates control the destinies of the wide world of pupils and pedagogues. Hence it is one thing to have educational theories and quite another thing to teach in a school. The curriculum of the school is usually determined not by the principles and ideals of its masters, but by the requirements of the public examinations for which it prepares its scholars. Hence it becomes a matter of some interest to study the syllabuses of the powerful and authoritative examining bodies, to compare and contrast them, and to try to discover what are the guiding ideas of their compilers. The syllabuses which I propose to discuss are those of the Oxford and Cambridge Local Syndicates, the Joint Board, the London University, the College of Preceptors, and the Central Welsh Board. I think it desirable, however, before plunging into the thick of the numberless details which will have to be noted, to lay down some general considerations which may serve as standards of judgment.

For the purposes of a short article it would be going too deep into fundamentals to discuss at any length the ultimate aim of education as a whole. Perhaps I may be allowed to define it provisionally as *the development of such mental force and moral character as shall enable the educated person on the speculative side of his nature to view life steadily and view it whole, and on the practical side to perform his duties in all the societies of which he is a member.* Taking this, then, as the ultimate aim of education, we may ask how far history can be used as a means to its attainment.

First, what is history? It is the record of the development of mankind as organised in political communities, or states. Secondly, what is the value

of the study of this record? Various are the answers given. According to Emerson, history interprets man to himself: "The world exists for the education of each man. There is no age, or state of society, or mode of action in history, to which there is not somewhat corresponding in his life." Froude holds that it impresses his mind with a sense of the orderly and ordered governance of humanity; it shows "that the world is somehow built on moral foundations; that in the long run it is well with the good and in the long run it is ill with the wicked." Carlyle maintains that it gives practical guidance for the future, and is a repository of maxims: "History is a real prophetic manuscript"; it is "the letter of instructions which the old generations write and posthumously transmit to the new." M. Seignobos will not admit this: "Le but de l'histoire est," he says, "non pas de donner des recettes pratiques pour se conduire." Its intrinsic worth, he thinks, is small. It serves as an instrument of mental training: "Le principal mérite de l'histoire est d'être un instrument de culture intellectuelle." To the teacher, however, the value of history will seem to lie in the fact that it transports the pupil into a larger world than the one in which he lives, that it widens his interests, enlarges his sympathies, brings him into contact with men of heroic mould and great achievement, and makes him familiar with ages alien from his own. History does for time what geography does for space. The latter reveals the world as it is, the former shows it as it was. In the hands of a skilful and well-equipped teacher history can be used as an instrument second in value to none as a developer of mind and character.

Of course it will be used in very different ways with pupils of different ages. For purposes of classification four successive stages of school life can be distinguished, viz.:—(1) The *preparatory stage*, from fifth to ninth year; (2) the *junior stage*, from ninth to fourteenth year; (3) the *senior stage*, from fourteenth to seventeenth year; (4) the *specialist* or *scholarship stage*, from the seventeenth year onward.

In the first, or preparatory stage, the educational keynote is "interest." During this period the teaching of history means the telling of stories. Such stories are selected as are calculated to widen the mental horizon of the child, to quicken his imagination, and to enlarge his sympathies. Moreover, since selection is made, in this stage, if in no other, history may be made to subserve a moral purpose. Here, too, it may be allowable to inculcate patriotism; for, though in older persons patriotism is apt to degenerate into a "vulgar vice" by alienating their hearts from men of other nations than their own, yet in young children it is a noble virtue in so far as it raises them above the narrow interests of self, and home, and school.

In the second, or junior stage, the keynote is "information." The main aim of the teacher is to store the minds of the pupils with useful knowledge—classified, coördinated, concatenated. "Mere information" is most unduly depreciated and most unwarrantably sneered at by some educationists nowadays. Even Herbart underrated it, while to Prof. Armstrong and the apostles of heuristic nihilism it is a thing of no worth whatsoever. But the mind must have some material on which to work, and it is during this period of childhood that it most easily absorbs and assimilates what in later years would be regarded as "dry facts." To the boy between nine and fourteen they are not drier than anything else. He dislikes any mental exertion, and he resents being kept from football to learn lists of dates no more than he resents it if he is detained by a pointless heuristic *siesta*. Hence the teacher will continue to aim at the imparting of knowledge, but while doing this he will manage to do other things. In his history lessons in particular he will be able to train the judgment to see connections between causes and effects, to provide practice in the logical arrangement of facts, to supply exercise in literary expression and style, to give experience in the use of books of reference.

In the third, or senior stage, the keynote is "intelligence." The imparting of information is subordinated to the training of the mind. The prime aim of the teacher becomes the quickening of the pupils' understanding. The mental faculties being now fully developed, the pupil is trained in their exercise. Hence history is studied in a new manner and with new objects. The facts learned in earlier years are reviewed and re-examined in order that their inner significance may be learned. The history of ideas receives more attention than the history of events: the principles and motives which animated the great actors of the past are more diligently sought for and more closely scrutinised than details of their lives. The wider movements of humanity are observed, and the community of mankind is seen to be a more fundamental truth than the separation of men into nations, each with its petty patriotism. History, moreover, during this period provides valuable preliminary training in research, and in a kind of research different from that with which students of natural science are familiar. Historians never come into contact with facts, as men of science do: they have to do with records of facts. They cannot make experiments: all their information is second-hand. The most valuable "original authority" is nothing more than a witness all of whose statements have to be received with sceptical caution. Hence historical research develops into an elaborate weighing of evidence, and historical students who are sent to books of sources for information, or are told to compare and contrast the conflicting views of different historians, are trained in that judicial attitude of mind so necessary in the higher concerns of daily life. And though the research which the schoolboy of seventeen can do must inevitably be of the most rudimentary kind, yet its neglect involves a serious weakening of the value of the educational work which history is fitted to do.

The fourth, or final stage, that of the specialist, lies almost outside the sphere of my article. In

this stage history is no longer regarded as a mere instrument of education; it is an end in itself. The developed and highly-trained faculties of the student are brought to bear on the material of history not for subjective, but for objective ends. The specialist begins to repay to history the debt which he owes to education in general.

Here I conclude my preliminary survey. Next month I propose to examine the history syllabuses of the various public examinations in order to see how far they leave it possible to realise the ideals of history-teaching in schools.

THE TRAINING OF SECONDARY-SCHOOL TEACHERS AT THE UNIVERSITIES.

CAMBRIDGE UNIVERSITY DAY-TRAINING COLLEGE.

THE peculiar note of the training for secondary schoolmasters given at this college is that the students training for both primary and secondary schools are trained together. This plan may have been followed at other places, but it was certainly begun here, and in spite of prophecies of failure, has succeeded beyond expectation. The college consists at present of forty-eight primary-school students and sixteen secondary-school students, all men, as the college does not admit women. The whole number of students is divided into two classes for attendance at criticism lessons, it being thought inadvisable to take so large a class in a criticism lesson. The criticism lessons are held once a week for each division. The main practising-school for both primary and secondary students is the Higher Grade School, Paradise Street—an elementary school with classes learning French, Latin, and advanced science. Its use as a practising school is in every way most beneficial for the boys who compose it, and they gain far more than they can lose. The secondary-school students receive the first part of their practical training either in this school or in other schools of a similar character, and they continue it for a period which varies with their proficiency. Some of them on entrance are so entirely unversed in the art of teaching that they have to begin with a very small number of boys, and they all begin by watching instead of teaching themselves. It has been argued that secondary-school teachers should be trained in secondary schools, but secondary schools are at present so imperfectly organised that they can only be used by students who have already had some practice in teaching. Headmasters will only receive those certified to be competent to teach a particular subject, and on the condition that their teaching harmonizes with the general curriculum of the school. Besides this, the masters in secondary schools do not like to have their classes interfered with, and parents would object to their children being taught by inexperienced teachers. Everything, therefore, points to the desirability, if not to the necessity, of training teachers first in an elementary school until they have gained experience, and can be transferred safely to a secondary school.

Besides the practice in school, which is after all the basis of training, the regulations provide that the students must teach every term for at least a week in some selected school. This is not always a secondary school, although provision is made in every case that all the secondary-school students should have some experience of secondary-school teaching before they receive their certificate. There is also a great advantage in giving the secondary-school students an opportunity of seeing the primary-school students at work, as most of them have been pupil teachers, and have had considerable experience in teaching before they entered the college. The two classes of teachers harmonise admirably together, and it is found that Eton and Harrow men develop as strong an interest in their individual pupils as they would if they were drawn from their own social class.

Besides the weekly criticism lessons, which are common to both departments, there is also a special criticism lesson for the secondary-school men by themselves, delivered generally to selected boys of higher capacity. The use of a secondary school for criticism lessons has not yet been obtained.

Besides this practical work the secondary-school students have to attend lectures. There are University lectures delivered twice a week on the theory, history and practice of teaching, lectures on psychology and on school management. Once a week students attend an educational "seminar," in which papers are read on some special branch of teaching, such as the teaching of classics, history, or mathematics, and are carefully discussed by the students under the guidance of the Principal and the Master of Method. Examinations are also held from time to time.

The proficiency acquired by these exercises is tested by a public examination on which the University Certificate is awarded. This consists of two parts—one practical, the other theoretical. The theoretical examination is held twice a year, in December and June, and consists of four papers, three of which deal respectively with the theory, history, and practice of teaching, while the fourth consists of essay questions, taking each an hour to answer, on each of the three branches of the study. Those who pass the examination are divided into three classes. The practical examination is conducted by an examiner appointed by the University, either at a training college or at the school in which the candidate has taught. Three sets of notes of lessons are provided by the candidate, and one of these lessons is chosen by the examiner. It is also the duty of the examiner to make enquiries as to the candidate's general fitness and experience in teaching, and on the combined evidence one of three classes is awarded. This certificate admits to Column B of the Register if other conditions have been satisfied. Primary students sometimes

take the University certificate either in lieu of, or in addition to, the Government certificate.

All members of the Training College must be members of Cambridge, or of some other University, and must have at least passed the Previous Examination or its equivalent. But, in practice, nearly all of them are graduates. The fee for the course is £5 5s. a term, payable in advance: the fee for the two parts of the certificate examination is £3 for members of the Training College. The work of the secondary-school students as a whole is so arranged as not necessarily to occupy their whole time, and this leaves opportunity for other employment, such as private tuition or working for a fellowship.

The arrangements work so smoothly, and are, in the opinion of the Cambridge authorities, so successful that they would not be inclined to alter them in any important particular unless convinced that an improvement could be effected.

THE WORK-BENCH FOR ELEMENTARY PHYSICS.

By ALFRED EARL, M.A., Tonbridge School.
Author of "Physical Measurements," etc.

THE efficiency of any laboratory depends very much upon the arrangement and the dimensions of the benches with which it is furnished; and the number, size and position of the benches in a laboratory set apart for physics in a secondary school may, perhaps, be profitably discussed for a short time in the interests of those who have new laboratories to furnish. Those who are in that position are fortunate, though they are not nearly so fortunate as those who have a voice in the dimensions, lighting and ventilating of the building before the furnishing begins. They are lucky to begin their plans at a time when the teaching of physics has obtained a fair recognition of its place in education, and the methods and material have begun to take a more settled form. There are nowadays plenty of firms, quite alive to technical requirements, to choose from; plenty of laboratories in working order; and the present generation of architects do much to relieve the young science-master of his burden of responsibility. Both architects and furnishers know what is wanted, as a rule, and are fertile in suggestion. As a matter of fact, the mysteries of the laboratory have been revealed as very ordinary, every-day affairs—the plain, common-sense products. Those who have had experience in laboratory work will perceive too readily how "little there is in it" if they chance to read these lines, but a few words may perhaps be excused on the ground that they are addressed to the neophyte.

Discipline and work are perhaps the chief considerations to be kept in mind. Without discipline there will not be much work; indeed, there is unusual scope for sport in a laboratory. An ordinary class-room has nothing that can compete with the long wooden rules (about the same length as a sword), water and gas in unexpected places, cans, metal discs, tubes, and what has been known to be used in some laboratories (for a time), shot, for weighing purposes. It is well, therefore, that a laboratory which is used by younger boys—for, of course, it is these alone who suggest precautions—should be provided with benches facing the same way, large enough (or numerous enough) to permit separation of individuals, and not so scattered that the eye of the teacher cannot command the room. It is really a compromise. The workers must be kept apart and yet they must not be given too much space. Economy in gangways and in the spaces between benches is an advantage. These matters affect the workers as well as the master. To come within the personal comprehension, so to speak, is important for both parties in the contract. That a master will be constantly moving about among his pupils is understood. Those invaluable few minutes of explanation before practical work begins, and of refocusing the attention during its progress, are in mind at this stage. And the best laboratory is that which is also a class-room as occasion demands, which lends itself equally well to preaching and practice.

Your benches being fitted to the requirements of personal control and to the satisfaction of a reasonable amount of comfort for the boys, you must not entirely lose sight of aesthetics. There remains still a not unimportant requirement, namely, a dignified appearance. This aspect of the matter is not mentioned because practical science is essentially consonant with dignity, but rather because nothing commands respect, even in boys, more readily than good workmanship and generous dimensions. Dignity, for this reason, leads in the end to economy.

Any school which has more than 100 boys "doing science" should have an elementary physical laboratory as well as one for more advanced work. Practical physics requires apparatus ranging from the very simple to the very complicated and delicate, and it is a great gain to keep the extremes, at any rate, quite separate. It is generally admitted that systematic science-work begins with the measurement of the three fundamental quantities—space, matter, and time; the observation of the simpler relations between any two of these quantities; and, after a grounding in these exercises sufficient to ensure a certain knowledge of what is meant by accurate measurement, some introduction to the facts and quantitites of heat and electricity. Stopping short at a very elementary treatment of heat and electricity together with an investigation of the prominent properties of the atmosphere and water, we exhaust the scope of the elementary laboratory. All the apparatus in use would be simple and movable, readily served out as required, and stored away again after the class has finished work. In this laboratory our requirements are narrowed down very considerably. *The work-bench is a simple, plain, solid table.* Nothing more is essential, and a room

provided with plain and firm tables (with adequate sets of apparatus taken for granted) is an elementary physical laboratory.

But now we come to detail, we have to consider:

(1) Shall each boy have a bench to himself, or several boys work at a large bench?

(2) How should the benches be arranged in the room?

(3) What is a convenient size, shape, and height of bench?

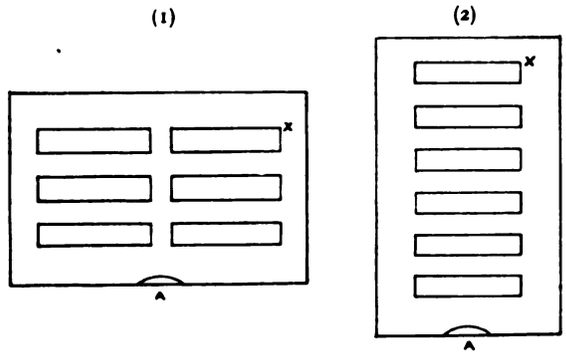
(4) What material is suitable?

(5) Gas and water supply?

In answer to the first question, it may be said that the separate bench is the ideal, the larger bench the more economical as regards both cost and floor-space. More material, and more carpentry too, is employed in giving a firm support to four separate benches than is required for an equally firm composite bench accommodating four boys. As regards floor-space, it is quite clear that the chief ground for adopting separate benches being the gain in control and observation which ensues from free movement round the apparatus, this increased freedom must call for more space. These separate benches are capable of easy rearrangement and of being compounded, if necessary, into a long bench.

The advantage of isolation and individual responsibility will be admitted by all. The practice of allowing boys to work in pairs economises in what is a serious outlay, the sets of apparatus; but it is not to be recommended in elementary work. It predates the period of *Mensch* and *Uebermensch* inevitably. If long benches are adopted, they should not be longer than 12 ft., and this should permit four boys to work at each. Two such tables placed abreast, with a gangway of 2 ft. between, could be placed in a room 32 ft. wide, though a greater width is desirable. A bench 12 ft. in length is not too long for four boys. The shortest length for them would be 10 ft., and architectural limits may impose this length. The space needed for each boy may range from 2 ft. 6 in. to 3 ft., and this statement brings us to the second question. The possibilities of arrangement decide to a great extent the dimensions of the benches. One condition may be taken for granted. *All the workers should face in the same direction—towards the blackboard.* Incidentally it may be mentioned here that the end wall of the room provides in itself a blackboard, if that part of it within easy reach be covered with a specially prepared black cement. There is no need for a board and framework, and the space covered, if accessible, cannot be too large.

A room 36 by 28 ft. is the smallest which would permit twenty-four boys to work in it and also give room for stocking all the apparatus required. It is a great convenience to have the elementary laboratory completely self-contained, and the less communication between laboratories the better. This room would allow three rows of benches placed lengthways. It may be mentioned here that it is a great advantage to have all elementary apparatus as much in evidence as possible; nothing is so annoying as a search in drawers for what is wanted. Open shelves and pigeon-holes instead of cupboards are therefore strongly recommended, in spite of extra dust in the room. Whether long or short, the benches should run parallel with the longer axis of the room. It is difficult to understand why the reverse is so frequently encountered both in class-rooms and laboratories. The boy in the far corner X, in (1), is not so far away nor as much hidden from the



master at A as he is in (2). And the same statement may be made if we have single benches for each boy. Both these plans represent 72 ft. of benching, *i.e.*, 3 ft. for each boy. Twenty-four boys is a large number for practical work, but such numbers still exist.[1] They will be somewhat more scattered if they sit at separate benches, but still not enough to go beyond ken and gaze. It is a matter for the individual taste of the master, and the available funds of the school, as to which plan is selected.

There is one restriction which may be emphasised here. Do not have any benches against the walls: all the wall space not occupied by windows (which cannot be too big) and sinks is sure to be called on later for the display of diagrams and models, and for the support of apparatus of a lengthy kind. Moreover, if walls are occupied at the beginning, future adjustments and additions are very much blocked, and the perfect laboratory cannot be evolved save by slow growth during use. Many, indeed most, details of requirement can only be learnt while actual work is in progress.

The bench itself, its shape, size and make, next requires consideration. A length of 3 ft. per boy has already been mentioned, and that, at least, should be allowed. The apparatus and its attendant notebook can put up with nothing less. When we come to the question of width, and consider it fully, we shall probably have to admit that there is a constant tendency to wastefulness at this point. It is difficult to see what a boy wants with more than 1 ft. 10 in. in width. If he attempts to cover more, he works clumsily, or lounges over his work. No; if there is any space going begging, add it to your length. For advanced work, of course, a greater width is advisable, but

[1] W. Cory, the well-known Eton master, refers, in his "Letters and Journals," to taking a class of ninety boys in 1846!

even if senior and junior forms both work in the same laboratory, there is no need to have the benches more than 2 ft. 6 in. in width, and they need not be so wide.

With regard to the material to be employed, teak cannot be bettered. Well-seasoned,[1] big planks of teak are in the end the most economical for chemical and physical benches. Though not essential and without special virtue, it is durable and looks well. It is a wood which is not likely to contract or warp if once properly seasoned. It absorbs oil or paraffin very well; the latter should be ironed in thoroughly at the start and, after that, about once a month. This prevents water from penetrating the wood and protects it in a great measure from the action of acids or alkalis. This process makes the benches unpleasant for elbows, but the paraffin need not be laid on so thickly as is advisable in a chemical laboratory. The planks when planed down should give a minimum thickness of 1¼ inches, and 1½ inches would not be out of the way. It is a great gain in appearance to plane down bench tops afresh when the stains have become unsightly. This implies flat tops without any erections; and in the elementary laboratories, at least, they will be quite plain.

The edge of the bench-top should everywhere be straight and rectangular, without chamfers, grooves, or beading. It will at times be necessary to clamp objects to the bench-top, and a straight edge is needed for that purpose. All joints in the top should be cross-tongued and glued, and the top screwed down and buttoned (from underneath) to a firm, solid 1¼ inches framework. The top should project about three inches everywhere. Pitch-pine is very durable for the framework and easily worked (which teak is not, turning the edges of tools very rapidly, to the annoyance of the carpenter). American white-wood is much more easily worked and is fairly durable, though a very light wood. It has the advantage of being cheap, and it takes stain remarkably well. The legs of the bench should be quite four inches square in section, and a twelve-foot bench would want at least six such legs. If eight legs are employed they may be thinner. They should be tied at the bottom and framed up in three-inch stuff. A good working height for these benches is three feet. That permits boys of from fourteen to sixteen to stand at their work and does not prohibit sitting down over it. Stools are a nuisance in a junior laboratory, but if they must be used, there is a stool, made by Messrs. Syers and Co., London, which does not permit fidgeting and screwing about, and is certainly very noiseless. It has a cast-iron, flat base.

If any support is needed at any time—say, for pendulum work or holding barometer tubes—this may be provided by movable stands or a wooden rail running the length of the bench and clamped to it. Permanent rails or stands, such as are sometimes seen, interfere very much with the supervision of the room, certainly obstruct the black-board, and are not necessary. They can be made of strips of wood clamped to the bench when the work demands them, and removed when they are not needed. A question may now arise, ought the table to be provided with drawers? The answer is an emphatic negative. If the table has to be employed in any way for storage, a few open spaces and pigeon-holes may be fixed at the rear. They should not be more than one foot deep, so as to give knee-room to the workers on the other side. Open cupboards, if they may be so called, are very useful even if somewhat untidy in appearance. Such apparatus as is in frequent use is conveniently kept there, and may be considered more or less under the control of the workers at their respective benches. Such a simple bench as has been described may be constructed by an ordinary builder or carpenter, under supervision and careful instruction as to the quality of wood and the dimensions, while there are a number of firms which make a speciality of laboratory furniture, and can be thoroughly depended upon. Their advertisements are usually to be found in scientific and educational journals. The cost will range, according to circumstances, from £3 to £5 a boy, allowing him a three-foot run.

The benches here described would be considerably complicated by adding gas and water fittings to them. Most teachers of experience will probably agree that water is most conveniently obtained from a couple of large and deep sinks with several taps, one at each side of the room. A rapid heater (one of Fletcher's) is a great boon if placed alongside the sink. These heaters give a supply of hot water at once and save the time of the class very largely.

In the matter of gas, if fittings to the bench are thought desirable, a straight piece of iron gas-pipe at the back of the bench and just flush with the top may be drilled and fitted with taps and nozzles for each boy's Bunsen burner. Another plan which has much to recommend it, for there is a good deal of waste of gas through the inherent carelessness of boys, is to distribute the gas over the ceiling and pass it down by hinged gas-pendants, which can be pushed up by means of a rod to the ceiling when not required, and brought down by the same means when wanted. An india-rubber tube connects with the burner on the bench. This method prevents meddling with gas, and makes for simplicity on the whole. In the more advanced laboratory, gas fittings should be found on the bench itself. One or two brass tubes coming up through the middle of the table with brass distributors form the best arrangement. The advanced bench will also want current leads, and more generous dimensions as regards width of top, and also as regards the legs and framework. Steadiness and strength are both important here. Two or three benches of 8 ft. by 4 ft. with sinks at one end should be provided, together with a certain number of smaller tables. But the discussion of these and many other details suited to more advanced work must perforce be postponed.

[1] It is advisable to have a clause introduced into the specifications acquiring the contractor to make good, at his own expense, all shrinkages recurring in the work within twelve months after completion.

THE MODERN LANGUAGE ASSOCIATION.

THE Modern Language Association is now in the twelfth year of its existence, for it was founded under the presidency of Prof. Max Müller in 1892.

The main objects of the Association are:

(1) To raise the standard of efficiency in the teaching of modern languages, and to promote their study in our schools and the country generally.

(2) To obtain for modern languages the position in the educational curricula of the country to which their intrinsic value as instruments of mental discipline and culture entitles them, apart from their acknowledged commercial and practical importance.

(3) To provide for students and teachers of modern languages means of communication, by publishing a journal and by holding meetings, debates or conferences, for the discussion of language, literature, and methods of teaching.

In order to obtain for modern languages that position in the educational curricula of the country so desired in article 2, it was necessary to make teachers realise the actual position which modern languages held; and thus one of the first tasks of the newly-formed Association was to obtain and publish long tables of statistics, showing the relative amount of time which a large number of schools devoted to modern languages in comparison with the other subjects of the school curricula. Statistics were also compiled and published showing clearly in tabular form the relative proportion of marks given to modern languages and science in the entrance examinations of Woolwich and Sandhurst.

The Association has identified itself with many useful reforms, for instance:

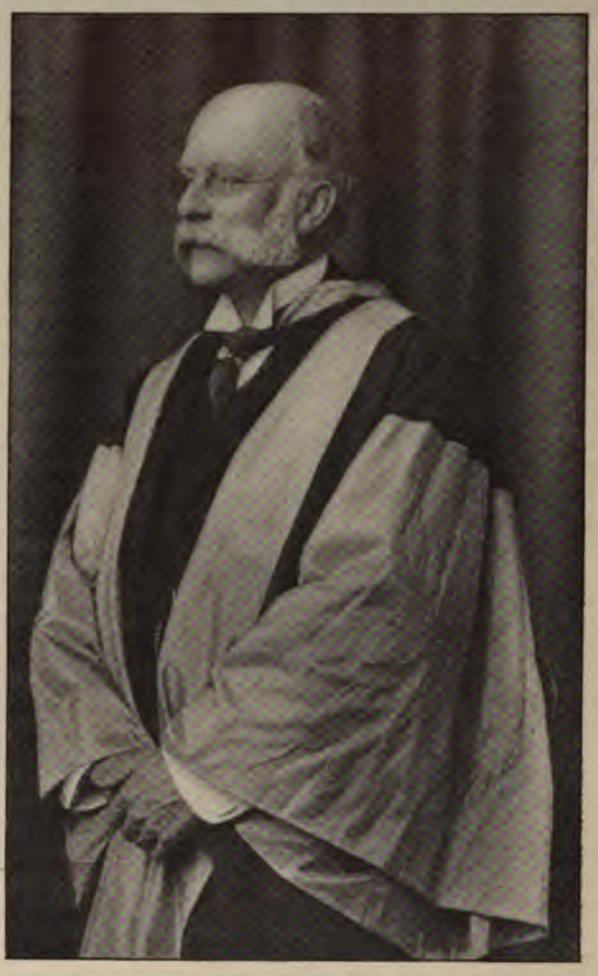
(1) The introduction of oral tests into examinations of modern languages.

(2) The wider recognition of modern languages in the Universities of Oxford and Cambridge, either by making one modern language a compulsory subject in the entrance or first public examination, or by allowing it as an official subject in place of one of the ancient languages.

(3) The persuading of public educational authorities to grant travelling scholarships to teachers anxious to improve their knowledge of modern languages and of methods of teaching by residence abroad.

All these efforts have not yet been crowned with success, and much work remains to be done, especially with regard to the improvement of English teachers of foreign languages by residence abroad. It can never be too strongly impressed upon governing bodies of schools and upon headmasters and headmistresses that any permanent improvement of modern-language teaching and methods lies in their own hands. Reforms are useless unless they insist on getting the right kind of teachers for modern languages and unless they give them a reasonable remuneration for their work. To get good work out of their teachers they must see that they have much shorter hours than has been the rule up to now. It is not possible to prepare work properly, especially on so fatiguing a system as the "new method," if the teaching hours run to thirty or more in a week, besides the correcting of endless exercises at home. The disastrous results of the present system can be seen in half the secondary schools in the kingdom.

Another point of the greatest importance is the



SIR ARTHUR W. RUCKER, M.A., LL.D., D.Sc., F.R.S.,
Principal of the University of London,
President of the Modern Language Association for 1903.

institution of the furlough system, by which teachers in a school should have a year's holiday in rotation, the school paying for a substitute, in order that the modern language teacher may go abroad, freshen up his knowledge of the language he teaches and keep himself up to date by personal inspection of the latest methods of teaching in other schools.

It is largely by sub-committees that the Association does its work, and among the various

questions which have engaged the attention of special committees are:—

(1) The establishment of an Honours School in modern languages at Oxford.

(2) The question of the use of phonetics in teaching modern languages in schools.

(3) To present a report on French text-books and readers now in use in secondary schools.

(4) To draw up a time-table suitable for schools by which a fair proportion of time should be given to English, French, and German.

(5) To draw up a list of modern language teachers in secondary schools.

Many other points of interest to teachers in general as well as those engaged in modern language teaching have been discussed by the sub-committees. At the annual general meetings many interesting papers have been read, followed by useful discussions.

By its constitution the Modern Language Association consists of a President, a General Committee, an Executive Committee, Sub-Committees appointed to consider special questions, ordinary members, life members, and honorary members. Its organ is the *Modern Language Quarterly*, which is sent post-free to all members.

The Association holds a general meeting once a year, usually in the week preceding Christmas. These meetings, usually held in London, have also taken place at Cambridge and Liverpool.

Its members consist of teachers of modern languages and those interested in the study of modern languages.

Prof. Max Müller, the first president of the Association, was followed in 1894 by the Dean of the College of Preceptors, Mr. H. Weston Eve; 1895, Rev. Dr. W. Haig-Brown, Master of the Charterhouse; 1896, Rev. R. S. de Courcy Laffan; 1897, the Right Rev. J. E. C. Welldon, late Bishop of Calcutta, Canon of Westminster; 1898, A. T. Pollard, M.A., Headmaster of the City of London School; 1899, Rev. Dr. W. W. Skeat, Professor of Anglo-Saxon in the University of Cambridge; 1900, Dr. Richard Garnett; 1901, Rev. Dr. J. P. Mahaffy, Dublin; 1902, Prof. A. S. Napier, Oxford.

The Association has during 1903 been fortunate enough to have Sir Arthur W. Rücker, F.R.S., the Principal of the University of London, for its president. That the present year has been a prosperous one, and that much useful work has been done, is largely due to the influence and guidance of one who is at the same time a *savant* and a great administrator.

For the year 1904, Prof. Michael Sadler has consented to preside, and this should be another great year in the annals of the Modern Language Association.

In Mr. F. Storr the Association has a most efficient chairman of committee; while among the members who have taken a prominent part in the work of the executive committee may be mentioned the names of Mr. Eve (President in 1894); Dr. Heath, Director of Special Reports for the Board of Education, who was for years general editor of the *Modern Language Quarterly*; Prof. Breul, Reader in Germanic at the University of Cambridge; Prof. Rippmann, of Queen's College; Mr. Somerville, of Eton; Mr. Payen-Payne, the hon. treasurer; Mr. Lipscombe, for many years hon. secretary of the Association; Mr. Longsdon, of the Surrey County Council Schools; Mr. Twentyman, of the Board of Education; and Mr. Milner Barry, of Mill Hill.

The Association has now some 460 members; and a glance at its list will be sufficient to show that its members are not confined to England, or even to the British Isles. It is a wide-spreading Association with members all over the British Empire—from the Transvaal to Montreal. There are members in the United States and in India; as well as French, German, Swiss, and several Japanese members. A large proportion are teachers in secondary schools, both men and women, and the interests of higher education are also well represented. Sixty new members have been elected in the course of the year.

One of the newer features of the Modern Language Association is the system of local secretaries, the object of the system being to form a centre in each district around which those interested in modern language teaching can gather. There are now local secretaries in Sussex, Worcestershire, Cambridgeshire, Gloucestershire, Lancashire, Derbyshire, Warwickshire, Yorkshire, and Surrey; in Wales and Ireland; in Germany and France and Belgium; while Africa has no less than three centres, one at the Cape, one in the Transvaal and one in the Orange River Colony.

From this short account it will be seen that the Modern Language Association has done some useful work in the past. If it can be sure of the hearty support of modern language teachers and the co-operation of all who are interested in modern languages, it hopes to do still more useful work in the future.

Selections from Gower's Confessio Amantis. By G. C. Macaulay. li. + 251 pp. (Oxford Press.) 4*s*.—Learning and labour have gone to the making of this scholarly edition. Between five and six thousand lines have been selected from the first six and the eighth books of Gower's poem, and many of the most interesting stories are thus presented to students. The editorial point of view is that Chaucer needs to be supplemented by Gower in order to illustrate adequately the stage at which the English language had arrived in the closing year of the fourteenth century, both because the test of Gower's poem is more authentic, and was the work of an author who was less reckless than Chaucer in his deviations from accuracy of syntax and spelling; and also because he would contend that Gower represents the average literary taste of his age better than his more famous contemporary. The summary of Gower's work is intensely interesting, and the chiefest of his productions is analysed with much skill. Mr. Macaulay's discussion of Gower's language and metre is elaborate; and the notes disclose wide research. The glossary and index are very full. Altogether an edition well worthy of its place in this well-known and elaborate series of annotated texts, and calculated to popularise the study of a period in English literature forbidding to many students on account of its linguistic and metrical difficulties.

THE VALUE OF CLASSICAL STUDY.[1]

THE publication of this work is timely, now that so many influences seem to be directed towards dethroning the classics from their seat of honour. Prof. Hardie, in a simple and engaging style, takes several topics of general interest, and examines what the ancients had to say of them. He knows the kind of use which should be made of the knowledge and power gained by careful and accurate study of the ancient languages, and so does something to meet the objections of those who can see "no use" in classical study at all. No doubt our fathers studied language too much for its own sake, and it must be granted that that school of thought is doomed. But the uses of language remain; not only the mental drill, which, say the objectors what they will, is not equalled by any other, but the sympathetic knowledge of the hearts and minds of the ancients, which is now so much needed.

Prof. Hardie's first lecture is on the ancient view of nature, a subject interesting to the literary critic as well as the student of human thought. He rightly sets out from Ruskin's description of the "pathetic fallacy," in those illuminating chapters from the second volume of "Modern Painters." By an examination of the poets, he concludes that the Greek did not lack close observation of nature, nor the enjoyment of its beauties, but only "the sentimentalism which dwells upon its own feelings, and congratulates itself upon their subtlety." In this respect he finds Virgil, Pliny, and the Romans closer to ourselves. In the second lecture, on ancient "Beliefs concerning a Life after Death," he discusses the three heads: (1) Hero worship and the cult of the dead, (2) Eleusis, and (3) Orphic beliefs and rites, taking something of the same line as Miss Harrison does in her new book—that beneath the Olympian worship was a wider and more savage popular system, and that the Orphics developed the ideal side of the religion further than any others among the Greeks. It is a clever sketch, but the first section takes no account of the vital difference between the conceptions of those who burned and those who buried their dead. There were, in fact, two popular systems in Greece which have become fused. The discourse on the "Supernatural" deals with witchcraft, magic, ghosts, second sight, and like subjects. We are surprised not to find mention of the gruesome scenes of witchcraft in Apuleius, but the paper is otherwise of a good popular type.

"The Age of Gold" is more detailed than the rest, particularly in its discussion of Virgil's Fourth Eclogue, on which it is a useful commentary. In the lecture on the "Vein of Romance" among the ancients, Prof. Hardie well defines that elusive element in assuming that it is not feeling, but a self-conscious and sympathetic analysis of feeling, which distinguishes it from other elements. He finds the beginnings of romance in Hesiod (a large assumption one would think), and further in Stesichorus, and later tragedy. The Alexandrians found it a congenial theme, and its fullest development is in the Scriptores Erotici. Prof. Hardie does not allow himself to do more than to indicate the great field of derivative romance, the mediæval transformations of classical story—the tale of Troy, for example.

Another large subject, which can only be touched upon in a lecture, is the "Language of Poetry." In this paper, by the way, attention is directed to the likeness between the inflated style of some poets and that of the peasant, instancing Hesiod's φερέοικος; but this is not a fair parallel, since the word is descriptive and not affected, clear, not obscure, and peasants do constantly prefer the descriptive word to the formal name. Ἀνόστεος, by the way, "the boneless," is not the snail, but the polyp. There is some excellent criticism in this essay, which brings out the essentially ideal character of the poet's world, to which an ideal language and metrical form are well suited. We do not think, however, that the author fully understands the principle which gives rise to metre—that throbbing of passion which, like our heart-beats, is periodic, and naturally suggests metre. But his claim that poetic language must not be ignoble is much needed; here the Greek language was peculiarly happy, for none of its common words were ignoble, as many of ours are. This lecture and the next, on "Metrical Form," are the most detailed in the book, and deserve the study of students who desire to understand the mechanism of poetry. The remaining lectures are entitled, "Literary Criticism at Rome," the "Revival and Progress of Classical Studies in Europe," and the "Aims and Methods of Classical Study." The last turns on what we may call educational polemics, and attempts to answer the question, "Why should we study the classics?" It does not cover the whole ground; but Prof. Hardie, like all who know, speaks strongly of the value of such studies for the culture of the mind. For the next few years he will probably be speaking to the deaf; this country has not yet fully found out the sham of so much of what is called technical "education." He speaks truth, nevertheless, and we hope the defenders of the fortress will hold it until there is a better chance of a fair hearing for reason than seems now to be the case.

[1] "Lectures on Classical Subjects." By W. R. Hardie, M.A., Professor of Humanity in the University of Edinburgh, formerly Fellow of Balliol College, Oxford. x. + 348 pp. (Macmillan.) 7s. net.

Classical Association of England and Wales.—The attention of schoolmasters and schoolmistresses is directed to the formation of a Classical Association for England and Wales. A preliminary meeting of the Association was held on December 19, at University College, London, under the presidency of the Master of the Rolls, and there is every reason to hope that the Association will soon be an important educational body and accomplish a great work. We hope in our next issue to refer more fully to the inauguration of the Association.

MODERN TENDENCIES IN GERMAN EDUCATION.[1]

THIS work, Prof. Lexis explains in his preface, was undertaken at the suggestion of Dr. Studt, the Minister of Public Instruction, and is intended to be to some extent a commentary on the epoch-making Royal Edict of November, 1900. It forms a large volume of upwards of 400 pages, besides a statistical survey, a bibliography, and other supplementary matter, and consists of twenty-four articles, all by specialists, of whom several are the bearers of well-known names.

In the Edict of 1900 it was declared that the Gymnasium, the Realgymnasium and the Latinless Oberrealschule (the three schools with a nine years' course) were thenceforth to be regarded as of equal worth in respect to general higher education. Formerly only pupils of the Gymnasium could be fully matriculated to the University; the Realschule could send its pupils there only for the study of mathematics, natural science and the modern languages. The advance actually made along the line indicated in the Edict is thus summarised in an historical retrospect by C. Rethwisch, the Director of the Charlottenburg Gymnasium. Candidates from all three schools are now admitted to the examination for secondary school teachers, without limitation to particular branches of study, and also to the examinations in law and for the army and navy. For the medical degree the right to qualify is extended to the Realgymnasium but not to the Oberrealschule.

This question of the *Gleichwertigkeit* is dealt with at length by Prof. Paulsen, of Berlin, in an article that recalls the fighting manner of the late Prof. Huxley. His plea is for freedom, for freedom for each to follow the course of education for which nature has fitted him. It is not, he says, what we work at that matters in education, but how we work at it. Unless the work calls forth the free and lively activity of the mind, unless it is spontaneous and flows from real sympathy with the subject, it is useless. Different people are differently disposed towards the pursuit of knowledge, and often so exclusively (one is reminded of Darwin at Shrewsbury) that everything outside the bounds of their favourite study seems trifling or worthless in comparison. On this ground Prof. Paulsen utters his protest against the tyranny of the old classical tradition, with its *cogite illos intrare*, and its claim to furnish the one and only means of intellectual culture. It did furnish this in the days of the Humanists, but since then we have developed literatures of our own. These also offer a worthy field of education. We have ceased to believe in the old literatures as the supreme, unchanging model of the beautiful; "we have learnt to think historically." In reply to the question whether the advantage that the classical schools enjoy in the protracted study of the ancient tongues can be compensated for by a more intensive study of modern literature, Prof. Paulsen returns an unqualified affirmative. On the one hand, in estimating the educational value of the old learning it must not be forgotten that there is a great difference between the ideal and the actual, between the rich spoils of the hero and the humble booty of the rank and file. On the other hand, it is or should be possible for the realschuler to get a good grip of English and French. In proportion as the practical value of the old authors has decreased, that of the moderns has increased, and even if the educational value of the former be considerably greater, the point where that value becomes of any real moment is far more difficult of attainment. But there is more involved in this question than the mere choice between two roads. Our whole attitude towards life rests on a knowledge of nature and natural laws, and that nation which lags behind in respect to this knowledge must inevitably forfeit its place in the van of progress.

Prof. Lexis himself follows on similar lines on the question of the *Berechtigung*, the right to present candidates for admission to the universities. The classical is the best literary training, but the soil must be favourable to it, and the soil tends constantly to become less favourable. The whole direction of the age is towards the practical; our thoughts are of bicycles and airships, of railway-speeds and world-records, and education must take account of the demands and tendencies of the day. And if we blame the present-day utilitarianism, we should at least bear in mind that, at the time when the foundations of classical education were laid, Latin and Greek had a very definite utilitarian object, the one as the international language of the learned, the other as the storehouse of mathematical and scientific knowledge. In the latter part of his paper (of his first paper we should say, for there are four others on different aspects of the same subject) Prof. Lexis deals at length with the oft-repeated allegation that the pupils of the Gymnasium prove intellectually superior to those of the Realschule. In reply he points to the great advantage enjoyed by the former through the possession of social prestige. A father who himself has had a classical training will prefer to send his sons to the Gymnasium, or a promising boy will be sent there and a less gifted to the Realschule.

In an article on teaching in general, the Director of the Hildesheim Gymnasium, M. Heynacher, has much that is interesting to say of the over-pressure that is so common in German schools. When this point was brought to the fore in 1890, it was stated by the military authorities that nearly half of those who then presented themselves with the certificate for the one year's service were either permanently or temporarily unfit, short-sightedness and heart-complaint being the chief grounds. Of the pupils in Prima, 74 per cent were short-sighted. Some attempt to cope with this evil was made in the school-plan of 1890, but

[1] "Die Reform des höheren Schulwesens in Preussen." Edited by W. Lexis, Professor in Göttingen. (Halle A. S.: Verlag der Buchhandlung des Waisenhauses, 436 pp.) 12 marks.

without much result. For the true solution of the difficulty the writer looks to the careful sifting of the matter presented to the learner so as to separate the more from the less important. This principle has been applied to several of the Latin authors. The chief syntactical points have been counted and tabulated; those occurring frequently are to be thoroughly mastered, and the rarer ones merely explained in passing. And in general the writer would emphasise the practical or realistic in the teaching of humanistic subjects, and he would have mathematics, science, history and geography brought more into touch with the interests and needs of everyday life. But he concludes with the expression of a grave doubt whether the present time, with its increasing carelessness and addiction to luxury, is favourable to any far-reaching reform of education.

The endeavour after the practical, of which mention has just been made, is apparent everywhere throughout Prof. Lexis's book. It is in particular the keynote of the paper on the teaching of mathematics by Prof. Klein of Göttingen. The teaching must take more account of the subsequent needs of the pupil; there must be more applied mathematics.

The article on the teaching of Latin is from the pen of Prof. Waldeck, of Corbach. The aim here, according to the new curriculum, is the understanding of the more important authors. Grammar and composition, regarded as objects in themselves, are completely shut out. The official remarks on the curriculum insist on the careful differentiation between the important, the less important, and the unimportant. In all examinations the criterion is translation into German criticised as German.

Prof. Lehman, of the Luisenstadt Gymnasium in Berlin, writes of the teaching of the mother-tongue. Already in the curriculum of 1892 this was declared to be the centre-point of higher education. This goal, however, is to be attained, not by any increase in hours, but by making all subjects contribute towards the desired end. There is to be as much writing as possible, but no free composition, no expatiating on nothing in particular. Short summaries of passages studied, whether in the languages, or in geography and history, or in science, are the means prescribed; and there is to be the similar treatment of such passages orally. In examinations no excellence in any other subject or subjects may compensate for an "unsatisfactory" in German. To the books already in use have been added (but facultatively) Middle-High-German authors in the original form, and the use of translations is extended. Sophocles in German is added to the already-prescribed Homer in the modern schools, and Shakespeare is to be read in the classical. But Prof. Lehman complains that the universities, while they turn out plenty of workers in the field of literary history, furnish no teachers of German. Literature at the universities, he adds, means the history of literature, where the greatest poet is only an historical phenomenon.

In the teaching of the modern languages (the article is by Prof. Mangold, of the Askanischen Gymnasium in Berlin) the goal remains as before, the knowledge of the foremost writers of the last three centuries; but greater stress is now laid on the colloquial side of the teaching. The teaching in general is based on the reading-matter, to which the grammar, sifted down to the indispensable, is strictly ancillary. The use of the foreign language in the class is declared desirable so far as it does not interfere with thoroughness.

Among the remaining contributions should be mentioned one on the teaching of Greek by Prof. von Wilamowitz-Mœllendorff, of the University of Berlin, and an interesting account of the Altona and Frankfurt Reformanstalten, where Latin in Gymnasium and Realgymnasium is postponed till Untertertia—that is, till the age of 12, so that up to this point the school-plan coincides with that of the Latinless Oberrealschule. Of the complete success of this system there seems no longer much room for doubt. Prof. Waldeck, in the paper on Latin-teaching already noticed, declares it to be his opinion, founded on long experience, that a Reform school-pupil at the age of 15, who has therefore had only three years of Latin, but on a previously-laid base of French and the mother-tongue, will be able to achieve at least as much as an 18-year-old pupil of the ordinary Gymnasium with his six years of Latin without that base.

And there we must stop. In warmly recommending this book we are not unmindful that the theory of education is little in favour with masters in English secondary schools. This, indeed, is natural, because, as we have no *system* of secondary education, theorising can have little objective worth. In Germany it is otherwise, and of this fact the present book, with its abundant sanity and reasonableness, is a signal proof.

G. A. R.

A GREEK GRAMMAR FROM AMERICA.[1]

IN the accidence of this book there is not much to remark. It has been written by a competent scholar, whose knowledge is not behind the times; he uses the evidence of inscriptions, and shows praiseworthy care in small matters. The section on Word-formation is specially good. When we differ from him, we do not blame him for carelessness; but it seems a lack of judgment to change the term *aspirate* to *rough mute* (p. 16), and a serious practical mistake to print the uncontracted forms within the contracted of verbs in αω, &c. American boys are very different from English boys if they will learn these contracted paradigms aright. We would also add a column of adverbs in κις on p. 58 with the ordinary numerals. That about exhausts our criticism of

1 "A School Grammar of Attic Greek." By T. D. Goodall, Professor of Greek in Yale University. xvi. + 334 pp. (D. Appleton & Co.).

the accidence; but the syntax presents a new feature, and, we think, a promising one. Sentences are classified according to the mood of the verb (here called "mode"), as indicative, subjunctive, optative, and imperative sentences.

Now no student of language can fail to see that many mistakes are made by those who use logic as a principle of classification. There is a benefit in grouping the uses of syntax under logical heads, but such a classification discloses the fact that various forms are used for one idea (as ὄφελον and optative for *wish*), and various ideas can be expounded by one form (as statement and past purpose by the indicative mood). Prof. Goodall boldly takes these forms as his basis of classification, and we are bound to say that at first sight this seems to us likely to be of greater practical use than the other. We have indeed tried it to a small extent, but, to confess truth, it never occurred to us to carry out the principle fully. The proof of the grammar is in the learning, but we shall be surprised if this does not prove successful. Nouns have long been classified on the same plan. We confess that it would be useful to have the complement briefly sketched in either case; but that may be set as an exercise for boys. As instances of exceptionally clear exposition, we would cite §469 on the pluperfect with ἄν, and §6'6*b* on the optative with ἄν.

We may now proceed to indicate some points in which improvement seems to be possible. It is a faulty definition, we think, to say that "a simple sentence consists of one finite verb, with or without other words" (p. 168). A "predication," yes; but there is no finite verb at all in one large class of sentences, such as ὁ ἀνὴρ ἀγαθός. There appears to be one important omission: μὴ with indicative of strong denials, as Homer's μὴ μὲν τοῖς ἵπποισιν ἀνὴρ ἐποχήσεται ἄλλος, and Aristophanes' μὴ 'γὼ νόημα κομψότερον ἤκουσά πω, also found in Sophocles and elsewhere. For the understanding of the true sense of μὴ this idiom is of high importance. The use of διότι for reported reason seems also to be wanting. There is also one mistake: no such phrase as ἔστιν οἵ is known to Greek (254); the idiom is εἰσὶν οἱ, ἔστιν οὓς, &c. Misprints are: read πεπεισμένος εἶην, p. 112; γνοίης, p. 260; θνητοῖσι, p. 258; οὐκ, p. 252.

We hope that a new edition will correct these errors, and also that a good paper will be used; the book is unpleasantly heavy. On the whole, however, this book confirms our impression, given already in other reviews, that the Americans are exceptionally well qualified to treat of grammar.

Miss F. Lovibond, a former student of Bedford College for Women, London, and lately Sanitary Inspector at Rochdale, has been appointed Woman Sanitary Inspector to the Borough of Holborn. Miss Margaret Gilliland, former student of the Training Department of the same college, has been appointed head-mistress of the Aske's School, Acton, one of the schools of the Haberdashers' Company. Miss Gilliland had a distinguished academic career and obtained distinction in the examination for the Teachers' Diploma of the University of London.

THE MOST NOTABLE SCHOOL-BOOKS OF 1903.

THE selected list of the best of the school books published during 1902, which we published in our issue for last January, was appreciated by a large number of teachers throughout the country. We have again secured the assistance of experienced teachers, and they have drawn up, for the guidance of schoolmasters and schoolmistresses who find it difficult to examine all the school books published, the lists of the best books for school use from those issued during 1903. In compiling the lists attention has not been limited to the books reviewed in these columns. In those cases where it seemed desirable a few remarks have been added explaining the scope of the book.

Modern Languages.

"The Teaching of Languages in Schools." By W. H. Widgery. (Nutt.) Second impression. 1s. net.

Long out of print (1st edition, 1888). This will be to many a new book. It is admirable.

"Le Travail du Style enseigné par les corrections manuscrites des grands écrivains." Par Antoine Albalat. (Colin.) 3 fr. 50.

M. Albalat's studies in French style are well known; in this book he has excellently carried out a happy idea.

"History of French Versification." By L. E. Kastner. (Frowde.) 5s. 6d. net.

The best book on the subject in English. Experience shows that boys often leave school with only the vaguest ideas about French prosody, though they have read a good deal of French verse.

"Siepmann's Primary French Course." (Macmillan.) First term, 1s. 6d. First year, 2s. 6d. Wall-picture to illustrate the Course. 15s. net.

"New First French Book." By S. Alge and W. Rippmann. (Dent.) 1s. 6d. net.

A comparison with the old version will be very instructive to teachers. Mention may also be made of the new wall-pictures of the seasons.

"Deutsche Musteraufsätze. Ein stilistisch-rhetorisches Lesebuch für die Mittel- und Ober-stufe höherer Schulen." Von Dr. H. Ulrich. (Teubner.) M. 2. 80.

Useful for advanced classes in German and for private study.

"Studium und Methodik der französischen und englischen Sprache." Von Otto Wendt. (Leipzig: Dürr.) M. 2. 50.

Warmly recommended to teachers.

"L'enseignement des langues anciennes et modernes dans l'enseignement secondaire des garçons en Allemagne." Par A. Bornecque. (Colin.) 2 fr. 25.

"Die Reform des höheren Schulwesens in Preussen." Herausgegeben von W. Lexis. (Halle: Waisenhaus.) M. 14.

These two books (especially the latter) contain most valuable information on the teaching of languages in Germany.

"The Method of the Recitation." By C. A. McMurry. (Macmillan.) 4s. net.

A very helpful book.

Classics.

Amongst the year's schoolbooks, two stand out as original n conception:—

"Latin Hexameter Verse." By S. E. Winbolt. (Methuen.) 3s. 6d.

This book for the first time attempts to teach hexameters on principle, not by haphazard. It is full of learning, clearly conveyed, and provided with numerous exercises.

"Latin Picture Stories." By W. H. S. Jones. (The Norland Press.) 1s.

A series of twelve cards, each containing a story in several scenes, and intended to be used for "free composition" in class.

Good schoolbooks of the more ordinary types are:—

"Stories of the Kings of Rome," from Livy. Selected and simplified by G. M. Edwards. (Pitt Press.) 1s. 6d.

A very good beginner's book.

"Homer, Odyssey, XIX.-XXIV." By W. W. Merry. (Clarendon Press.) 3s.

"T. Lucreti Cari De Rerum Natura III." By J. D. Duff. (Pitt Press.) 2s.

"C. Sallusti Crispi Jurgurtha." Edited by W. C. Summers. (Pitt Press.) 2s. 6d.

For sixth form boys and university men:—

"The Iliad," XIII.-XXIV. By Walter Leaf. (Macmillan.) 18s.

A new Latin grammar, especially valuable on the linguistic side, is:

"A Latin Grammar." By W. G. Hale. (Ginn.) 4s. 6d.

Two histories and a book of sources deserve mention.

"History of Rome for Middle and Upper Forms." By J. L. Myres. (Rivingtons.) 5s.

"The Story of Rome as the Greeks and Romans tell it." By G. W. Botsford. (The Macmillan Company.) 4s. 6d.

"Sources for Roman History, B.C. 133-70." Collected and arranged by A. H. J. Greenidge and A. M. Clay. (Clarendon Press.) 5s. 6d. net.

An excellent collection of illustrative pictures from ancient sources, edited with full explanations and aids to further study, is:—

"Illustrations of School Classics." By G. F. Hill. (Macmillan.) 10s. 6d.

Several books of importance for serious students, or teachers, have been published:—

"The House of Seleucus." By E. R. Bevan. (Arnold.) 30s. net. Two vols.

"Ancient Athens." By E. A. Gardner. (Macmillan.) 21s. net.

"Prolegomena to the Study of Greek Religion." By J. E. Harrison. (Cambridge University Press.)

"A History of Classical Scholarship." By H. Sandys, Litt.D. (Camb. Univ. Press.) 10s. 6d.

English Grammar and Composition.

"Grammar Lessons." The Principal of St. Mary's Hall, Liverpool. (Longmans.) 2s.

A good book for teachers.

"Primer of Historical English Grammar." Skeat. (Blackie.) 2s. 6d.

"English Grammar on Historical Principles." Lees. (Allman.) 3s.

Either of these will be found useful for London Matriculation, &c.

"First book in Old English." Cook. (Ginn.) 3s.

A good book. Has been very well received.

"English Composition." Kimpster. (Norland Press.) 2s.

A good teachers' book.

"Senior Course of English Composition." Nesfield. (Macmillan.) 3s. 6d.

One of the best books published for advanced students.

"Errors in English Composition." Nesfield. (Macmillan.) 3s. 6d.

Contains over 2,000 examples.

"Essentials of English Composition." Tarbell. (Ginn.) 3s.

Very practical.

History.

"Tutorial History of England." Fearenside. (Clive.) 4s. 6d.

A full, up-to-date manual.

"History of England for Catholic Schools." Wyatt-Davies. (Longmans.) 3s. 6d.

From the Roman Catholic point of view, but impartial.

"History in Biography," 1485-1603. West. 1603-1688. Powell. (Black.) 2s. each.

Well-written biographies of leading statesmen.

"The Romance of the Civil War." Hart and Stevens. (The Macmillan Co.) 3s. 6d.

A "Source-Reader" in American history.

"Problems and Exercises in British History," 1066-1216. Lindsey. (Heffer.) 2s.

One of a series, showing how to answer questions.

"James Chalmers." Lovett. (Religious Tract Society.) 3s. 6d.

A biography of a hero-missionary, useful for library.

"Nelson and his Captains." Fitchett. (Smith, Elder.) 7s. 6d.

Biographies of admirals, useful for library.

For Use of Teachers.

"The English Church," 1625-1714. Hutton. (Macmillan.) 7s. 6d.

Part of a new eight-volumed history, by standard writers.

"The Cambridge Modern History," vol. vii. The United States. (Cambridge University Press.) 16s. net.

A standard work by various writers, summarising the results of modern research.

"Freeman's Historical Geography of Europe" (with atlas.) Bury. (Longmans.) 19s.

A new edition of a standard work, by the Cambridge Professor of Modern History.

"A New Student's Atlas of English History." Reich. (Macmillan.) 10s.

Specially devoted to details of campaigns and battles, but with other maps.

"The Modern Age." Myers. (Ginn.) 6s.

An enlightening story of Europe till our own days.

"Special Method in History." McMurry. (The Macmillan Co.) 2s. 6d. net.

How to teach history.

Geography.

"Handbook of Climatology." By Dr. G. Hann. Translated by R. de C. Ward, of Harvard. (Macmillan.) 12s. 6d.

Hann's work is the acknowledged authority on the subject, and should be accessible to all who aim at being more than "chapter-ahead" teachers.

"Asia," "Europe," "Africa"—Series of "Descriptive Geographies," by A. J. and F. D. Herbertson. (Black.) 2s. 6d. each.

A well-known and justly-praised series. Each book consists of an up-to-date introduction and an anthology of descriptions from original sources.

"Australasia," "Africa"—Elementary Geography Reader series by Prof. Lyde. (Black.) 1s. 4d.

"Asia"—The "World and its people" series of Geography Readers. (Nelson.) 1s. 6d.

"Europe: vol. II. The North West." By G. G. Chisholm. (Stanford.) 15s.

The latest volume of the well-known "Stanford's Compendium of Geography" comprises the United Kingdom, the Low Countries, and Scandinavia. It is a first-class book of reference.

"Central Europe." By Dr. Joseph Partsch, of Breslau. (Heinemann.) 7s. 6d.

"Danish Life in Town and Country." By Jessie Bröckner. (Newnes.) 3s. 6d.

This is part of an excellent series well worth reading. Other books are "Italian Life," by L. Villari, and "Spanish Life," by L. Higgin.

"Highways and Byways in S. Wales." By A. G. Bradley. (Macmillan.) 6s.

"Ireland: Industrial and Agricultural." By W. P. Cloyne. (Brown and Nolan.) 5s.

An official handbook containing much of interest to anyone who has to take up Ireland as a subject of examination.

"Handbook of Commercial Geography." 4th edition. By G. G. Chisholm. (Longmans.) 15s.

This may be called the *sine qua non* of commercial geographers.

"A Short Commercial Geography." By Prof. Lyde. (Black.)

"Commercial Geography of the World outside the British Isles." By Dr. A. J. Herbertson. (Chambers.) 2s. 6d.

A supplementary work to Dr. Herbertson's Commercial Geography of the British Isles. It gives a capital birds'-eye view of the subject, and is arranged on a novel basis which is worth developing.

"The Royal Geographical Society's Syllabuses of Instruction in Geography." By Mackinder, Rooper and Chisholm (Royal Geographical Society).

This is the work of experts, and, though some of the "Instructions" may be criticised as ideal rather than practical, should be studied by all teachers of geography in elementary as well as secondary schools.

"A Teacher's Manual of Geography." By Ch. McMurry. (Macmillan.) 2s. 6d.

Mr. McMurry gives us the American method; his advice is specially adapted to the users of the well-known Tarr and McMurry Geographies.

Mathematics.

"Elementary Geometry, Practical and Theoretical." By C. Godfrey and A. W. Siddons. (Cambridge University Press.) 3s. 6d.

This work is a complete expression of the ideas of reform in the teaching of geometry as laid down by the Mathematical Association. Great stress is laid on the use of mathematical instruments, squared paper, &c. The work is full of examples and applications.

"A New Geometry for Schools." By S. Barnard and J. M. Child. (Macmillan.) 4s. 6d.

A work on the same lines as the above, completely carrying out the most recent recommendations, and also full of exercises in deductive and practical geometry.

"Solid Geometry." By Dr. Franz Hocevar. Translated and adapted by C. Godfrey and E. A. Price. (Black.) 1s. 6d.

Useful as showing how the subject is presented to German tudents. Many additions to the examples in the original are made by the English translators. The subject is well and simply treated.

"A School Geometry," By H. S. Hall and F. H. Stevens. (Macmillan.) Parts i., ii., and iii., 2s. 6d. Parts i.-v., 4s. 6d.

Based on the recommendations of the Mathematical Association and the report of the Cambridge Syndicate.

"Elementary Geometry." By W. M. Baker and A. A. Bourne. Published in the following parts: Book I. (Substance of half of Euclid I.); Books I., II. (Substance of Euclid I.); Books I.-III. (substance of greater portion of Euclid I.-IV.); Books I.-IV. (substance of Euclid I.-IV.); Books IV.-VII. (substance of Euclid I.-VI. and XI.) (Bell.) Complete, 4s. 6d.

"Practical Exercises in Geometry." By W. D. Eggar. (Macmillan.) 2s. 6d.

A very simple book, suitable to mere beginners; proceeding gradually to mensuration and a geometrical illustration of quadratics.

"Experimental and Theoretical Course of Geometry." By A. T. Warren. (Oxford: Clarendon Press.) 2s.

Based on the recommendations of the Mathematical Association: the first part of the book experimental, the second deductive.

"Elementary Geometry." By Frank R. Barrell. Parts i. and ii. of Section I. (Longmans.) 2s.

The first portion of a School Geometry, which, when complete, will contain the subject as far as Euclid XI. The experimental and practical part is worked with the deductive.

"Vectors and Rotors, with Applications." By O. Henrici, F.R.S., and G. C. Turner. (Edward Arnold.) 4s. 6d.

Treats vectorially of geometry and mechanics in their elementary portions. Quite suitable for the higher classes in schools.

"Arithmetic for Schools and Colleges." By John Alison and John B. Clark. (Oliver and Boyd.) 2s. 6d.

An excellent exposition of the philosophy of arithmetical rules; contains the usual collection of examples.

"Arithmetical Types and Examples." By W. G. Borchardt. (Rivingtons.) 3s. 6d.

Carries out recommendations of the Mathematical Association. Uses graphical methods, and logarithms to calculate compound interest.

"The School Arithmetic, being a School Course adapted from 'The Tutorial Arithmetic.'" By W. P. Workman. (Clive.) 3s. 6d.

A bulky volume dealing exhaustively with the subject, the number of examples, &c., being immense. Does not use logarithms for the calculation of compound interest.

"Technical Arithmetic and Geometry for Schools." By C. T. Millis. (Methuen.) 3s. 6d.

A book which may well go hand in hand with the study of deductive geometry. Applies arithmetical calculation to the figures of elementary plane geometry, conic sections, irregular curvilinear figures, &c.

Contains a separate chapter on Graphs.

"Elementary Algebra for Schools." 8th edition. By H. S. Hall and S. R. Knight. (Macmillan.) 4s.

"A Short Introduction to Graphical Algebra." By H. S. Hall. (Macmillan.) 1s.

Deals specially with graphs on squared paper.

Physics and Chemistry.

Physics.

"Elementary Physics, Practical and Theoretical." Second Year's Course. By J. G. Kerr and J. N. Brown. (Blackie.) 2s.

"Practical Exercises in Light." By Dr. R. S. Clay. (Macmillan.) 2s. 6d.

Distinguished by the extended application of pin methods and other simple experimental devices.

"Practical Electricity." By J. H. Belcher. (Allman.) 2s. 6d.

No electrostatics, but contains useful experiments in other branches of electricity.

"Electricity and Magnetism." By C. E. Ashford. (Arnold.) 3s. 6d.

Contains theoretical and practical work from the stage of the beginner up to the standard required for university scholarships.

"Electricity and Magnetism." By R. T. Glazebrook, F.R.S. (Cambridge University Press.) 7s. 6d.

An adequate and sound statement of the position of electrical science, illustrated by experiments for lecture-room and laboratory.

"Laboratory Physics." By D. C. Miller. (Ginn.) 8s. 6d.

Includes several novel experiments as well as useful hints to teachers.

Chemistry.

"Elementary Experimental Science." By W. T. Clough and A. E. Dunstan. (Methuen.) 2s. 6d.

A good elementary course of physics is included in addition to the chemistry.

"Elementary Lessons in Chemistry." By W. L. Sargant. (Blackwood.) 1s. 6d.

A beginner's book.

"Practical Chemistry." By Walter Harris. 3 vols. (Whittaker.) 1s. 6d. each.

No illustrations, but the volumes provide a good working course in chemistry.

"Theoretical Organic Chemistry." By Dr. J. B. Cohen. (Macmillan.) 6s.

Comprehensive and more interesting than books on organic chemistry usually are.

Useful for Teachers.

"A Text-book of Physics." Vol. ii. Sound. By J. H. Poynting, F.R.S., and J. J. Thomson, F.R.S. (Griffin.) 8s. 6d.

Another instalment of what is regarded as a standard work.

"Conduction of Electricity through Gases." By J. J. Thomson, F.R.S. (Cambridge University Press.) 16s.

A masterly exposition of important developments of modern electrical science.

"Text-book of Organic Chemistry." By Prof. A. F. Holleman. Translated by A. Jamieson Walker. (Chapman and Hall.) 10s. 6d. net.

A really good book dealing mainly with theoretical aspects of the subject. Fresh and vigorous in treatment.

Natural History.

Botany.

"A Text-Book of Botany" (2nd English edition). By Strasburger and others. Translated by Porter and Lang. (Macmillan.) 18s.

"A Class Book of Botany." Mudge and Maslen. (Arnold.) 7s. 6d.

"Nature Studies (Plant Life)." Scott Elliot. (Blackie.) 3s. 6d.

"A Text Book of Plant Physiology." G. J. Pierce. (Holt, New York).

"Flowering Plants: their Structure and Habitat." Charlotte L. Laurie. (Allman.) 2s. 6d.

"Introduction to Botany." Stevens. (Heath.) 6s.

Geology.

"Text Book of Geology." 2 vols. 4th edition. Geikie. (Macmillan.) 30s.

"The Evolution of Earth Structure." Mellard Reade. (Longmans.) 21s.

"Agricultural Geology." Marr. (Methuen.) 6s.

"Geological Rambles in East Yorkshire." Sheppard. (Brown.)

Nature Study.

"An Introduction to Nature Study." Stenhouse. (Macmillan.) 3s. 6d.

"Studies in Nature and Country Life." Catherine D. and W. C. D. Whetham. (Macmillan and Bowes.) 2s. 6d.

"Lessons on Country Life." Buchanan and Gregory. (Macmillan.) 3s. 6d.

"Insect Folk." Morley. (Ginn.) 2s. For children.

"Ways of the Six-footed." Comstock. (Ginn.) 2s. For children.

Zoology.

"A Treatise on Zoology." Part I. 2nd fasc. Introduction and Protozoa. Edited by E. Ray Lankester, F.R.S. (Black.) 15s.

"Cambridge Natural History, vol. vii. Balanoglossus—Fishes." (Macmillan.) 17s.

"A Laboratory Guide for Beginners in Zoology." Weed and Crossman. (Heath.) 2s. 6d.

CAMBRIDGE LOCAL EXAMINATIONS. SET SUBJECTS FOR 1904.

Preliminary.

Religious Knowledge.—(*a*) St. Matthew xv.-end; (*b*) I. Kings, ix.-end.

English Author.—Scott, "Marmion," Cantos i. and vi. (omitting the Introductions); Lamb, "Tales from Shakespeare."

English History.—Outlines, 1327-1603 A.D.

Geography.—Great Britain.

Elementary Latin.—"Stories of the Kings of Rome," adapted from Livy by G. M. Edwards. (Cambridge University Press.)

Junior.

Religious Knowledge.—(*a*) I. Kings; (*b*) St. Matthew; (*c*) Acts of the Apostles xiii.-xxviii.

English.—Shakespeare, "Richard II."; Scott, "Marmion," including the Introduction to Canto I., but omitting the Introductions to the other Cantos; Scott, "Kenilworth."

English History.—1327-1603 A.D.

History of British Empire.—1492-1784 A.D.

Roman History.—27 B.C.-117 A.D.

Geography.—Great Britain and Ireland, and Europe.

Latin.—One of—Cæsar, De Bello Gallico, IV., V., 1-23; or, Virgil, Æneid I.

Greek.—Xenophon, Anabasis, III.; or, Sophocles, "Scenes from the Antigone." (Clarendon Press.)

French.—Erckmann-Chatrian, "Madame Thérèse," chaps. 1-2; or, Dumas, "La Fortune de D'Artagnan," chaps. 1-6 (being chaps. 16-21 of "Le Vicomte de Bragelonne").

German.—Andersen, "Eight Stories," omitting "Ib und Christinchen" (Cambridge University Press); or, Schiller, "Die Jungfrau von Orleans."

Senior.

Religious Knowledge.—(*a*) I. Kings; (*b*) St. Matthew; (*c*) I. and II. Thessalonians.

English History.—1509-1603 A.D.

History of the British Empire.—1492-1784 A.D.

Roman History.—27 B.C-117 A.D.

Geography.—Great Britain and Ireland, and Europe.

Shakespeare.—"Richard II."

Spenser.—"Faerie Queene," Book I.

Scott.—"Kenilworth."

Latin.—Virgil, Æneid, I.; Plautus, Captivi; Livy, VI., 11-end; Cicero, Pro Lege Manilia, Pro Archia.

Greek.—Plato, Crito and Euthyphro; Thucydides IV. 1-41; Homer, Odyssey, X., XI., 1-224; Sophocles, Antigone. (Students must select one verse and one prose subject in Latin and Greek.)

French.—Molière, "Les Femmes Savantes"; Erckmann-Chatrian, "Madame Thérèse.'

German.—Schiller, "Die Jungfrau von Orleans"; Kohlrausch, "Das Jahr 1813."

THE TEACHING OF BOTANY IN SCHOOLS.[1]

IN order to make the most of scientific lessons in school the teacher should have a just appreciation of the relative importance of facts; he should encourage his pupils to work for themselves, and he should adapt his teaching to their present wants. All these requirements have often been disregarded by teachers of botany.

It is a mark of the present immaturity of the nature-knowledge movement that whenever a fresh attempt is made to stimulate the teacher it is accompanied by a great display of dried plants, diagrams, lantern slides, models, slices of useful woods, lists of species observed, with their dates, and maps of distribution. All these are dead products, and only indicate that someone has been taking pains. Those teachers who fix their attention upon the living plant and its activities will have little need of bought appliances.

THE PUPIL MUST WORK FOR HIMSELF.—It is probable that most men who have been productive workers in science have at length come to recognise that the best part of their learning they got for themselves. Example and guidance are thrown away upon those who do not make independent efforts, and knowledge accumulated by a mere act of memory is feebly grasped and soon forgotten. It is not by listening to other people, nor by reading their accounts of what they have seen and done, nor by gazing at the pictures which they have drawn, that we make lasting progress in science. The pupil who has been taught thus finds himself master of mere scraps of information, too uncertain for any practical application. He has no power of enlarging knowledge, or of applying old knowledge to new cases, and it is well if he has not acquired a disinclination to carry his studies any farther.

In biological teaching the abundance of the material, and the simple means of investigation which suffice for elementary students at least, make it possible for large classes to work at the same objects—a great advantage to both teacher and pupils. In botanical and zoological teaching, more than in other scientific courses, it is easy to adopt improved methods, such as that the teacher shall rarely give out information, but chiefly directions and questions, the class observing the object, making drawings and returning answers; that the laboratory work, if separated from the work of the class-room, shall always come first; and that the practical exercises of the students shall furnish the materials upon which the class teaching is founded.

THE TEACHING MUST BE ADAPTED TO THE NEEDS OF THE PUPIL.—It is characteristic of immature minds that they soon tire. This is a reason for frequently changing the topic and for making the object-lesson the regular mode of teaching botany in junior classes. Teachers of botany are not so liable as teachers of chemistry or physics to make the mistake of proceeding from the general to the particular, instead of from the known to the unknown, which is a very different thing. One often recognises the inexperienced teacher by such a phrase as that he intends to begin by consideration of the principles which underlie a particular science. Continuous book and paper work is hateful to children, and their exercises in learning and thinking should be varied with handiwork, their indoor work with outdoor work.

OBJECT-LESSONS IN BOTANY.—Object-lessons are the best way of instructing children in natural history, childhood being taken to include all ages under twelve or thirteen. In this stage there should be no formal and separate sciences, though the lessons, which are at first studiously varied, may gradually become connected. Among the conditions of profitable object-lessons the following may be noted:—

(1) Every pupil should have an object to himself, or at least be able to examine the object as long and as closely as he pleases. A drawing is not to be allowed to rank as an object.

(2) Living and growing plants should be frequently observed.

(3) The living plant should not only be studied in flower, but whenever the change of season brings on a new phase of growth. Fruits, buds, and seedlings are as important as flowers.

(4) Experiment can hardly come in too early, and there is nothing else quite so stimulating. Even young children can appreciate the interest of a simple experiment, and they may be allowed to take part in it before they are able to conduct it themselves.

It is discouraging to learn from advertisements in the educational papers what facilities are offered for scamping the object-lesson. The teacher is encouraged to buy his objects, to buy his pictures, and to buy his lessons. It is probable that the late demand for nature-knowledge has greatly multiplied the number of worthless object-lessons which are given in school. Unless the teacher regularly works for himself he is not fit to show others how to work, and no good will come of inducing him to add nature-knowledge to the list of subjects in which he offers instruction.

PLANT-PHYSIOLOGY IN THE SCHOOL.—We can recommend nothing better for first lessons in plant-physiology than the study of seedlings of common garden-plants. A course of lessons on seedlings can be so arranged as to lead the beginner to consider attentively the nutrition of a green plant, the adaptation of the plant to external circumstances, and the development of new parts. The course should also train the manual skill of the pupils. Boxes and the simpler kinds of chemical apparatus can be made in the school. The course should bring in drawing to scale, the graphical representation of experimental results, the care of garden beds, the care of water cultures, and many other practical arts. It ought also to encourage the habit of close observation, the habit of methodically comparing structures which in different plants answer the same purpose, the love of experiment, and the unwillingness (so characteristic of the scientific mind) to accept any conclusion except as the result of an independent and careful judgment. The study of seedlings will lead us to consider starch-formation in the green leaf, root absorption, transport of food material, storage of food reserves, and other branches of the great question of the nutrition of plants. The flower and the functions of its various parts can be studied with interest and profit. Experiments on pollination and on the movements of roots, leaves, and shoots are not too difficult for pupils in school.

SCHOOL GARDENS. (By Miss L. J. Clarke.)—At the James Allen's Girls' School, Dulwich, we have tried for some years, instead of giving information in the botany classes, to lead the girls to observe, to draw what they observe, to experiment, and to write accounts of their own experiments. In this we have

[1] Abridged from a Report of a British Association Committee, consisting of Prof. L. C. Miall (*Chairman*), Mr. Harold Wager (*Secretary*), Prof. J. R. Green, Mr. A. C. Seward, Profs. H. Marshall Ward, J. B. Farmer, and T. Johnson, Miss Lilian Clarke, and Dr. C. W. Kimmins.

been greatly helped by possessing a garden in which girls are allowed to own plots. The work has grown every year until now more than a hundred girls possess gardens. At first only order-beds were made. The girls were encouraged to own order-beds and to obtain plants for them. Gradually more order-beds were added, and now the most important British orders are represented, two or more beds being sometimes allotted to one order.

Fruits are valued as well as flowers, so most of the flowers are left to form fruits, and various methods of seed-dispersal are studied, as well as the structure of fruits. A large label is placed in front of each bed, and the name of the order, &c., is painted in white on a black background. In each bed small labels are also used; for it is the rule that to each plant, or clump of plants, must be attached a label bearing the English name.

When studying pollination it seemed so necessary that the girls should do some work of their own that beds were arranged in which pollination experiments could be carried on. Some plants are covered with muslin in order to exclude insects, while other plants of the same species are left uncovered. Afterwards the girls find out whether fruits appear on either set. When fruits are found on both the covered and uncovered plants, the number and vigour of the fruits are compared. In some plants the stamens are cut off while the flower is in bud. These pollination experiments arouse great interest, not only in those who happen to be studying pollination, but in girls of other classes. Numbers of plants are grown for the sake of pollination by means of insects. Figwort, snapdragon, foxglove, salvia, monkshood, sweet peas, and deadnettles are found most useful, and clumps of these are grown in different parts of the garden. A class often spends the lesson time in the garden, and is divided into detachments for observation of the visits of insects.

Experiments in assimilation are carried on in other beds, and the girls find out under what conditions starch is formed in green plants. Stencils are placed on some leaves, others are covered with vaseline, and various simple experiments are made while the leaves are still on the plant. The assimilation experiment beds are owned by a few girls only, but many make experiments on leaves.

Lately we have been specially interested in planting trees. It had been a drawback that, in studying the structure of buds, methods of branching, &c., we had no better materials than cut specimens or trees seen on excursions. During 1903 there has been planted in the garden a specimen of every common English tree not already possessed by us, and we hope that in future the girls will draw different stages of development of the buds of oak, beech, ash, sycamore, maple, willow, &c., while still on the trees.

EXCURSIONS.—The school excursion is highly valued as a means of stimulating observation in the field, but we are inclined to think that for want of attention to details its benefits are often imperfectly attained. Excursions are sometimes wholly unprofitable. The leader stops now and then to pick a flower, names it, mentions, perhaps, some curious feature which it exhibits, pops it into his vasculum, and walks on. Most of the party are not within hearing: they have no part assigned to them, and they bring back nothing more valuable than a few dying flowers, with a fleeting memory of some of their names. On a botanical excursion we ought to remark not only flowers and the peculiarities which distinguish them, but the ripening of fruits, the dispersal of seeds, and defences against scorching sun or winter cold. It is only by visiting the same plant at different seasons of the year that we become acquainted with what may be called its biography. To insure the active co-operation of all the members of the class, we have found it useful to distribute a cyclo-styled programme, describing, but not as a rule naming, things which are to be looked for.

Example: *A Moorland Walk.*

(1) Find several plants with rolled leaves.

(2) Find a plant whose leaves are converted into spines. Look out for seedlings of the same plant.

(3) Bring leaves of three moorland ferns. Can you find one which has two distinct kinds of leaves?

(4) Find a moorland grass with fine wiry leaves. Can you find more than one answering to this description?

(5) Find a moss which is very plentiful in swampy parts of the moor. Find another which is plentiful in dry places, and occurs in two distinct forms.

(6) There is a low plant on the moor which is now in flower. It grows in large patches, and from some of these patches we kick up dust with our feet, while other patches yield no dust. Bring specimens of each sort.

(7) How many years old is the biggest stem of ling which you can find?

The objects brought can be named and discussed at convenient halting-places. The school excursion should have a definite aim lest it degenerate into the raid upon wild flowers. It is a good plan to follow it up within a very few days by a lesson on the same objects.

COLLECTING.—We have a poor opinion of drying plants as an incentive to the study of botany. The dried plant is an inadequate substitute for the living and growing plant, and finds its principal use in the authentication of botanical discoveries made in distant lands. The habit of collecting plants for the herbarium may be hostile to close study of the environment, and confirm the pernicious belief that the thing of chief importance is to be able to name a plant as soon as you see it.

The museum, like the herbarium, may easily be perverted from its proper function and made a means of oppressing the intelligence of young persons. A vast multiplicity of objects bewilders instead of stimulating the observing faculty. We do not mean for a moment to disparage museums. They are indispensable to the special student, who, as science advances, demands that the museum shall become ever more complete and more rigidly systematic. But the wants of the specialist and of the schoolboy are so dissimilar that they cannot be met by the same collection.

In our opinion, both herbaria and museums are indispensable to scientific progress. They have their uses even to children, and many naturalists have begun by collecting. But there are things more advantageous and more appropriate to the first stage of botanical study than the accumulation of a pile of wild flowers, dried and named. School collections, illustrating the dispersal of fruits and seeds, the shapes of leaves in connection with bud folding and exposure of the largest possible surface to light, resistance to drought or cold, &c., may be made to gratify the collecting instinct in a harmless way, and at the same time to promote definite inquiries. It is the mechanical habit of collecting for selfish ends, and without any scientific purpose, that we wish to discourage.

SYSTEMATIC BOTANY IN THE SCHOOL.—The time to introduce systematic botany into the school course is the time when the need for it is felt. Good teaching will soon make it desirable that the class should be able to recognise such families as grasses and leguminous plants. The families, introduced to notice one by one and illustrated by fresh examples, soon become interesting, and even children delight in the power to run down the easier flowers. Simple descriptions of the families of flowering plants, in which the Latin words are cut down to a minimum, will greatly promote the attractiveness and intelligibility of early lessons in classification. We have no high

opinion of the description in technical language, once so strongly recommended, nor of the filling up of schedules. All this is apt to divert attention from things of greater consequence, and to stupefy the docile, while it alienates pupils of active disposition. One independent observation, one carefully conducted experiment, is worth sheaves of schedules.

THE TEACHER TO DEVISE HIS OWN COURSE.—It is natural that the teacher should seek the help of books in preparing his lessons on plants. Such help only becomes mischievous when he becomes dependent upon others alike for information and method. Servile reproduction of another man's lessons is a proof of incompetence. Not only do we maintain that the language and the selection of facts should be the teacher's own, but we would have him plan his own course of work. The unenterprising teacher may look upon the detailed syllabus as a safeguard, but to a teacher of any spirit it is intolerable tyranny. The low condition of elementary science in our schools is largely due to unwise examining. The detailed syllabus, the worship of technical language, the authoritative enunciation of general principles to pupils who have no knowledge of concrete facts, and the practice—still widespread—of endeavouring to learn a science by heart are largely due to the influence of public examinations. Liberty for the teacher is essential to progress on good lines. How to reconcile liberty with tests of efficiency is a difficult but by no means an insoluble problem.

TEACHING APPLIANCES.—The appliances required for junior classes in botany are few and simple. Much may be done with common knives, needles, and simple lenses. When the dissection of plants becomes a regular occupation, an inexpensive dissecting microscope such as that sold by Leitz of Wetzlar for 8s. will fulfil many requirements. Still simpler home-made stands will answer the purpose. It is good for any teacher who has a mechanical turn to devise his own microscope. To make the instruments really useful there should be at least one to every pair of pupils. The compound microscope should never appear in junior classes, and we are inclined to think that it will be best to reserve it for the highest form in a secondary school.

Diagrams and lantern slides are often made too much of in school work. They should be mere accessories which have their uses in particular cases. A good teacher will not depend upon them, and will usually prefer the drawing made in class. To make the most of simple means is an education in itself.

HISTORY AND CURRENT EVENTS.

THE year 1903 in French history reminds us of 1685. As then the all-powerful monarch resolved to make France uniformly Catholic, so now the all-powerful Republic seems resolved to make France, at least in its educational system, uniformly secular. Then, those who were opposed to the Catholic Church fled to foreign countries to obtain the liberty denied them at home. Now, we are told, some of the Catholics of Brittany are contemplating emigration to Canada. Their grievances are "the erection of a statue to Renan, the disturbances at Hennebont, the proscription of the Breton language, and the closing of the monasteries." Would it be possible to add also, what is now evident, the failure of the fisheries of S. Pierre and Miquelon? If so, what a mixture of motives would account for the possible Breton emigration! Race (the Bretons have never quite become French), religion, and commerce all combining to stir up one of the most conservative districts of Europe. And still it is "westward" that the course of empire takes its way. We note also that a Parisian Catholic newspaper discourages the movement on the ground that it is necessary to remain and fight for the Church.

IF only we could see the end from the beginning! Our ignorance of all the conditions makes every political experiment one of balancing unknown possibilities. Here is a beginning: "In accordance with the Tsar's manifesto of 1900, the Russian language was substituted for the Swedish at the opening of the Finnish Senate last October." Here is at least an approach to an end: "The experiment was made last year of enlisting recruits from Alsace and Lorraine in the regiments stationed in those provinces . . . The majority of them speak German fluently as well as French. . . . In some instances, the fathers of the recruits are old French veterans of 1870." Has, then, Germany nearly succeeded in assimilating Elsass and their share of Lothringen to their fellow-subjects? Is the Rhine question, now over a thousand years old (it dates, at least, from 843) approaching settlement, at least for our generation? If so, what light does it throw on the Finnish question? Finland has been under the Russian crown for nearly a century, and its nationality is not so extensive as Russian. Will Russia absorb and assimilate Finland? If not, what is the difference between Finland and Alsace-Lorraine, which will make the result different?

ALL our geographies are out of date. The rebellion in Panama, to which we referred last month, has been successful, or rather, being successful, it is no longer rebellion, and a new State has come into existence, being introduced to European society by the United States of America. Secondly, the boundary between what used to be Russia and is now "American" Alaska has been settled. We know now not only the position of Wales Island, Pearse Island, Sitken Island (of which, probably, ninety-nine hundredths of us were previously profoundly ignorant), but also their supreme importance to Port Simpson. How angry some of our Canadian friends are about all this! They want the right to make their own treaties, and some of them are saying that "the best way to contribute to the safety, maintenance, and integrity of the Empire" is to "defend their own country" instead of "handing the money over to the War Office or the First Lord of the Admiralty to spend for them." Exactly the same feelings were those of "the Colonials" of 1763.

IT has been stated so many times that it has become a platitude that the Boers of South Africa are the descendants of Dutch and French Protestants who have retained the ways of thinking that were universal in the sixteenth and seventeenth centuries, but have died out in Europe, at least for practical politics. Yet it is often necessary to repeat platitudes and enforce them in order to realise the atmosphere we breathe and so take for granted that we are apt to forget it and reckon without it. It is, therefore, interesting to watch the doings of the Dutch Reformed Church in South Africa. It is an excellent object-lesson in the working of Church and State, as conceived among us two centuries ago, to see this survival of the theocratic ages still active among the purely secular and commercial world of South Africa. They have lately declined to ally themselves with British Presbyterians even for friendly communication, they have excommunicated those members of their church that have been too pronouncedly pro-British, and the latest news is that they regard their Synod as "the best representative of the Afrikander nation, for in Parliament they have to mix water with their wine" (this last phrase was a favourite with eighteenth-century diplomatists). Compare with all this, the relations between Assembly and Parliament in Scotland in the years 1638-48.

ITEMS OF INTEREST.

GENERAL.

WITH the passing away of Mr. Herbert Spencer the world of education has lost its greatest modern leader. Mr. Spencer died at Brighton on December 8th in his eighty-fourth year—full of years and honour. This is not the place to attempt an appreciation of the contributions to knowledge of this representative English scientific philosopher. The magnitude of the work he accomplished, and the world-wide reputation he established, constrain us to leave to abler pens all attempts to estimate the position he is destined ultimately to occupy in the hierarchy of thought. Thinking of Mr. Spencer from the point of view of our readers, we like to remember that his father was a Derby schoolmaster, and that Herbert Spencer himself was the author of "Education: Intellectual, Moral, and Physical," which was first published separately in 1861. The whole of Mr. Spencer's philosophical works have doubtless exerted a profound, even if indirect, influence on the development of educational ideals in the nineteenth century, but his little volume on "Education," surely known familiarly by every schoolmaster and schoolmistress, has exerted an unmistakably direct moulding power on the thought and methods of all engaged in school work.

Now that the author of the four essays which "Education" contains has left us, it is consoling and instructive to trace many of the modern improvements in teaching methods back to his vigorous and convincing exposition of the aims and course of true instruction. Any teacher asked to name the outstanding improvements recently effected in teaching would point out as typical the changes which have been adopted by masters of science and mathematics in our schools. Yet, as long ago as 1861, Mr. Spencer formulated clearly the need for what is now called "heuristic" teaching. To quote Spencer's own words with his own italics: "Children should be led to make their own investigations, and to draw their own inferences. They should be *told* as little as possible, and induced to *discover* as much as possible." It is true that Rousseau had long previously urged the same need, but Spencer succeeded in impressing the truth upon his countrymen in a way which no previous writer had done. Similarly, as regards a rational mode of conveying primary conceptions in geometry, teachers will find all the principles which underlie modern improvements duly set forth in "Education." To contemplate the amount of work Spencer completed, and, at the same time, to remember the obstacles in the way of ill-health and want of substantial appreciation which he overcame, should serve to inspire all workers in education to think increasingly of the improvement of education and less and less of personal recognition and remuneration.

WE cannot congratulate the examiners in French at the Army Entrance Examination on the paper they set in November last. Not that their faults are as great as they were some years ago, when pieces of eighteenth-century English were given for translation into French. Our present complaint is a more general one—that the paper was not one to make candidates study French seriously, nor one likely to test their real knowledge of the language. The recent plan, drawn up by the Advisory Board on Military Education, referred to in our December issue, lays great stress on the importance of modern languages, and we doubt if the present type of examination commends itself to the Board. The first piece of translation into English had chiefly to do with the haggling of some peasants with a country hatter, and was not long enough to afford the good scholar an opportunity of showing his superiority. The second piece was the fable of the old cat and the young mouse—a piece that appeals more to the examiner than to the examinee, owing to its outlook on life. Would it not be better to select one of the two *versions* from an historical author in which there should be certain difficulties of vocabulary, but, more especially, difficulties of construction, to prove whether the candidate could change French idiom into English? The piece of prose was an extract from Washington Irving of no very great difficulty, although its structure made it awkward to convert into tolerable French. In addition there were three other questions: (*a*) an essay of fifteen to twenty lines on motor cars—a form of question of which we approve; (*b*) twenty-five parts of irregular verbs; and (*c*) five idiomatic sentences to be translated into French. On the whole, the paper does not compare favourably with that set in July last.

IN a recent letter to the press, Mr. Charles Martin, of Glasgow University, directs attention to newly-created posts in the lycées of France for British schoolmasters. The French Minister of Public Instruction has authorised the headmasters of a few lycées to receive an assistant-master of English, whose duties will be to give two hours a day English conversation lessons to small classes. In return for his services the assistant-teacher of English will receive free board and lodging, and will be allowed to attend any of the classes held at the lycée. He will take his meals with the other resident masters, and have a room for himself. The advantages of such an appointment during an academic year are obvious. It will be an excellent opportunity for British schoolmasters to acquire a thorough knowledge of the French language, and to observe the methods of teaching in the various subjects of the curriculum in France. Candidates must have a good pronunciation when speaking English, and it is not necessary for them to be able to speak French; they must be graduates of some British University or possess some similar academic recognition. The appointments will be made at an early date, and applications should be sent without delay to Mr. Martin.

IN connection with our note of last month, referring to the letter of the Duke of Devonshire to the Vice-Chancellor of the University of Cambridge, calling attention to questions concerning the University and its studies, we have now to record that a syndicate has been appointed to consider what changes, if any, are desirable in the studies, teaching, and examinations of the University, to confer with any persons or bodies, and to submit a report or reports to the Senate before the end of the Easter term 1904. The syndicate consists of the Vice-Chancellor, Sir Richard Jebb, Dr. A. W. Ward, Mr. Austen Leigh, Mr. W. Chawner, Dr. D. MacAlister, Dr. Forsyth, Dr. Keynes, Prof Thomson, Messrs. R. St. J. Parry, J. W. Cartmell, W. Durnford, and W. Bateson.

THE Technical Education Board of the London County Council has arranged to hold another conference this January, which it is hoped will be attended by a large number of teachers. In consequence of the number of subjects suggested for discussion the conference will be held on three days, January 7th, 8th, and 9th, 1904, and there will be two meetings on each day. The meetings will be held, as in previous years, at the South-Western Polytechnic, Chelsea. A discussion will follow the addresses on each occasion. The arrangements for the first day have been made in conjunction with the Geographical Association and details are given below, and those for the second day with the Modern Language Association. Addresses will be delivered on January 8th by Dr. E. R. Edwards, on "The application of phonetics to language teaching;" by Mr. F. B. Kirkman on "The method of using a French reader;" by Mr. G. G. Coulton on "Grammar teaching in modern languages," and by Prof. W. Rippmann on "Modern language examinations." Addresses will be delivered, on January 9th, by Mr. W. Egerton Hine, of Harrow School, and by Mr. Noel Lydon,

of Owen's School, on "Art teaching in secondary schools;" by Mr. W. Hibbert, Regent Street Polytechnic, on "New apparatus for the teaching of electricity and magnetism," and by Mr. R. W. Bayliss, St. Dunstan's College, Catford, on "Practical work in the teaching of geometry."

CONFERENCES have been arranged by the Geographical Association and the Technical Education Board of the London County Council, to be held in the South-Western Polytechnic, Chelsea, S.W., on January 7th, 1904. The subject of the morning conference is "The development of geographical teaching from nature-study." An address will be given by Mr. H. J. Mackinder, and Mr. J. Lomas will speak on "The teaching of geography on excursions." At the afternoon conference practical methods of teaching geography will be discussed. The following addresses will be delivered:—"The making and use of models," by Mr. P. F. Kendall; "The practical use of the globe in teaching geography," by Mr. T. Alford Smith, and "Ordnance maps and view slides," by Dr. A. J. Herbertson. An exhibition of carefully selected books, atlases, maps, models, slides, and other appliances useful for teaching geography, will be open daily at the same place from January 5th, 1904, until January 9th. Each day arrangements will be made for short explanatory lectures on the exhibits, at 4 p.m. every afternoon. Among the subjects will be—the construction and reproduction of maps, by Dr. Herbertson, of Oxford; the construction and reading of geological maps, by Prof. Watts, of Birmingham; the making and use of lantern slides, by Mr. A. W. Andrews, of London; and the historical maps exhibited, by Mr. C. Raymond Beazley, of Oxford. Admission will be free. After the close of the exhibition in London it will be transferred to some of the larger towns.

THE second annual meeting of the North of England Education Conference will be held in the Yorkshire College, Leeds, on January 8th and 9th, 1904. On January 8th, in the morning, after a reception of members of the conference, the subject of the training of teachers will be discussed under the presidency of Mr. Acland, the openers of the discussion being Prof. J. J. Findlay and Messrs. A. C. Price and A. J. Arnold. In the afternoon Mr. Augustus Spencer, of the Royal College of Art, South Kensington, will introduce the subject of art teaching; the Rev. Canon Lyttelton and Mr. P. J. Hartog, the teaching of English; and Prof. J. H. Clapham and Mr. W. H. Barber, Leeds, commercial education. In the evening there will be a reception and conversazione, by kind invitation of the Lord Mayor of Leeds. In the morning of January 9th, Prof. Michael E. Sadler will preside, and Mr. Harry Coward, President of the National Union of Teachers, Rev. W. H. Keeling, and Dr. Forsyth will open a discussion on the co-ordination of schools. In the afternoon, Mr. Arthur Somervell, of the Board of Education, and Mr. T. P. Sykes will introduce the subject of the teaching of music; Mrs. Miall and Mr. F. Storr, modern languages; and Prof. G. G. Ramsay and Dr. W. H. D. Rouse, the teaching of classics.

THE next annual meeting of the Incorporated Association of Assistant Mistresses will be held at the Notting Hill High School, London, W., on January 12th, 1904. In addition to routine business, the president's address will be delivered. Afterwards the conditions of tenure will be discussed under the following heads:—Appointment and dismissal of assistant-mistresses; the right of appeal; period of probation; the power of the headmistress to suspend an assistant-mistress; length of notice; and the necessity for a form of agreement. In the afternoon discussions on the working of the Education Act, 1902, and on the curricula of girls' secondary schools, will take place

COURSES in connection with the Teachers' Guild of Great Britain and Ireland, lasting from three to four weeks, will be held in August, 1904, at Tours, at Honfleur, and at Santander, if a sufficient number of entries is received. The students will assemble in the French centres on August 2nd, in the Spanish centre on August 4th. The representative of the English committee for Tours will be Mr. A. Wilson Green, Blackheath School; for Honfleur, Mr. J. W. Longsdon, Chairman of the Holiday Courses Committee, or Mr. E. W. Hensman, headmaster of the Rawlins School, Quorn. At Santander, the Rev. H. J. Chaytor, Merchant Taylors' School, Great Crosby, will be the representative, if he is able to attend. The committee is endeavouring to arrange for a course in Germany in 1904. If it succeeds, an announcement will be made in the Preliminary Circular of January.

A CIRCULAR issued by the Board of Education states that permission to take a third year of training abroad was first given to specially recommended students in training colleges in 1893, and since that date a few students have every year availed themselves of the privilege. Experience has shown that a year's residence abroad has proved of great benefit to students, since it has widened their general culture and experience, and has given them a much more thorough knowledge of the language of the country to which they have been sent than they could otherwise have acquired. Such knowledge has proved especially valuable in the case of those students who were sent to France, and it has enabled them to improve their methods of teaching through their observation of the methods adopted abroad. The Board of Education then proceeds to indicate for the guidance of the training colleges the principles upon which they propose to act in administering the privileges allowed.

A CONFERENCE was held on December 4th between the Consultative Committtee of the Board of Education and representatives of the General Council of Medical Education of Registration, the Institute of Actuaries, the Institute of Bankers, the Institute of Chemistry, the Institution of Civil Engineers, the Institution of Electrical Engineers, the Institution of Mechanical Engineers, the Pharmaceutical tical Society, the Royal Institute of British Architects, and the Society of Accountants and Auditors. A representative of the War Office and of the Civil Service Commission were also present. The subject of discussion was the desirability and feasibility of the introduction of a system of school-leaving certificates for England. Similar conferences with representatives of universities and of the teaching profession have been held before.

UNDER the auspices of several Greek Educational Societies recognised by the State, an educational congress will be held in April, 1904, in Athens. In connection with the congress it is intended to organise an exhibition of educational books and apparatus which will include an international section. Foreign contributors should deliver their exhibits in Athens not later than February 14th, 1904. Detailed information can be obtained from the secretary, G. Drossinis, Comité d'Organisation du Congrès hellénique d'Education, bureaux du Syllogue pour la propagation de livres utiles, 42, rue de l'Académie, Athens.

AMONG the expressions of opinion with reference to American education published by members of the Mosely Educational Commission, which has returned to England, those of the special correspondent to *The Times* are of particular interest and value. Readers who have acquainted themselves, with the aid of American educational periodicals, of the present condition of education in the States will not be surprised that the special

correspondent draws the following comparison: "In England every penny spent on education is too often grudged; in America there is no public expenditure that seems to meet with more universal approval. Here, I think, is the real lesson that America has to teach us. I am not sure that we have much to learn from the methods of instruction and the actual teaching given in American schools. What we can learn, and what we must learn if we are to recover lost ground, is a changed attitude towards education itself. When we believe in it as the Americans do we shall be able to hold our own." Or again: "Keenness, it seems to me, is one of the chief lessons that America has to teach us educationally; and another great lesson is liberal expenditure upon a matter of first-rate national importance. The idea that we must 'educate our masters' has been forced upon them sooner and more forcibly than upon us; and they are carrying it into practice further, perhaps, than we shall find necessary."

MORE than once, in his articles on the tour of the Mosely Commission, the special correspondent of *The Times* returns to the idea that American schoolmasters and schoolmistresses have little to teach us in the direction of methods of teaching. "In methods of teaching I doubt if we have much to learn from them (the Americans) except in the teaching of English, to which the necessity of perpetual immigration from alien lands compels attention at every stage of the educational ladder, and in the upper stages is made the basis of very thorough training in thought and expression. The teaching of Latin—though this subject is said to be on the increase—is behind that of our best public school traditions; while all that we have seen of the teaching of French and German in the schools is no better than our own—equally out of date, without, apparently, either any knowledge of, or attempts to realise, the newer systems of modern-language teaching as now pursued in Germany. Speaking generally, I may say the impression made upon some of us thus far is that the best teaching in English schools has little or nothing to learn from America, but that the general average of teaching power, owing to the greater attention paid to the professional training of teachers, is considerably higher than in English secondary schools."

BUT one lesson the administrators of American education have learnt much more thoroughly than education committees and school governers in this country, and that is "the workman is worthy of his hire." Salaries of teachers in the schools of the States are much better than with us. "They (the teachers) are fairly well paid—not extravagantly, but better than secondary-school teachers in England at all except the great boarding-schools, in which the stipends depend on that most unsatisfactory and irrational mode of remunerating educational work, the profits of a boarding house. The principal of a public high school in New York, for example, receives, if a man, about £1,000 per annum; if a woman, £750 or £800; while no assistant-teacher begins, so far as I can learn, at less than £200 or £250, rising according to age and experience; and, as public servants, all are in due course entitled to retirement on a pension."

SIR W. ANSON, M.P., Parliamentary Secretary to the Board of Education, distributed the prizes won by the students at the Goldsmiths' Company's Technical Institute, New Cross, London, on December 2nd. In the course of a subsequent address Sir William said, among departments of education too much neglected, he thought, was the necessity of learning how to enjoy our leisure intelligently, whether by the development of the taste in science, in literature, or in art, or whether by the development of the body by games which, as practised in this country, tended to produce that endurance, that self-restraint, and that public spirit which formed such valuable elements in the national character. We could all acquire an appreciation of the many things around us which tended to inform our minds, to enliven our interests, and to make life profitable and interesting to ourselves. It was this sense of the universal value of knowledge that made him somewhat regret the tendency of the present time to specialise too early, and to assume that every man, woman, and child in this country must have some absorbing, special subject of interest or study which must be pursued, to the neglect if not to the disadvantage of other things. There was room for all knowledge, and every one should find his interest where he could and where he liked. They could get good education out of many things, but the man whose knowledge was so cramped, his interests so limited, that he could care for nothing but the one subject to which his study, possibly his business, was devoted, who regarded every other subject and knowledge in a jealous and grudging spirit—that man or woman could hardly be called an educated being.

A DEPUTATION was received on November 26th by the London School Board from the National Union of Teachers, with a memorandum which they desired to present as the memorial of the Union, praying the Board to give instructions to those concerned in the teaching and inspection of its schools which should prevent misunderstanding as to the methods to be pursued, and the aims to be sought for, in the instruction and education of the children. The memorandum contained a statement of reasons against the re-introduction by some Board Inspectors of individual examination of scholars in London Board schools. The memorandum was referred to the School Management Committee for consideration and report.

PROF. MICHAEL E. SADLER has completed the delivery of a course of four weekly lectures on education at the London School of Economics. The subjects dealt with were: The educational problem in England; the task of the local education authorities; the universities and national education; the need for scientific investigation in education.

THE Regulations for the Cambridge Local Examinations in December, 1904, show that selected books in French and German are no longer set for preliminary candidates. Very easy unprepared translation (with a vocabulary of any unusual words) will be given instead. Senior and junior candidates are now allowed to take free composition in French, German, and Spanish, as an alternative to the translation of a continuous passage from English into the language. Senior candidates taking algebra will in the future be provided with four-figure tables of logarithms. The schedules for junior mechanics and senior applied mathematics have been modified. Mensuration and surveying will henceforth be included as a subject for juniors. The arrangement of the time-tables for juniors and seniors has been modified. The entries for the examinations in December last were distributed among the various examinations as follows: Higher 324, senior 2,823, junior, 8,327, preliminary 5,792. These numbers include 1,630 at colonial centres.

A POST-GRADUATE course for the training of teachers for secondary schools will be commenced this month at the London Day Training College of the London County Council and the University of London. The secondary department of this training college is recognised by the Board of Education as an institution at which candidates who intend to become secondary-school teachers may pursue their course of training. Candidates must before entering the college have taken a university degree or have passed examinations and undergone courses of study equivalent to those required for a degree. During their course they will receive instruction both in the theory and practice of education under the direction of the principal of the college, Prof. John Adams. At the close of the course students will

compete for the university diploma in the theory and history of teaching, and on receipt of that diploma will be entitled to have their names placed upon column B of the Teachers' Register, provided that they serve for a year as probationary teachers in a secondary school, and are certified at the end of the year as having done satisfactory work.

THE Bolton Education Society, which has not yet been in existence for a year, is already doing good work. The society is non-partizan, and open to teachers and other persons interested in the discussion of educational problems. The membership exceeds a hundred, and is increasing. Monthly meetings during 1904 have been arranged, and the programme of subjects is a very attractive one. On December 11th, a meeting was held in the Mayor's dining-room, and the Mayor of Bolton occupied the chair. A paper was read on this occasion by Mr. J. L. Paton, High Master of Manchester Grammar School, on "the teacher in account with the business man," and business men were specially invited. Principal Hopkinson, of Manchester University, is the president of the society, and Mr. M. P. Andrews, of Bolton Grammar School, is the secretary.

THE Board of Education has appointed Mr. W. C. Fletcher, Headmaster of the Liverpool Institute, to be the first chief inspector of secondary schools; he will assist in the development of a more suitable and comprehensive system of inspection. Mr. C. A. Buckmaster has been appointed chief inspector of schools under that branch of the Board which deals with evening schools, technology and higher education in science and art.

DR. S. G. RAWSON, Principal of the Huddersfield Technical School, has been appointed Director of Education for Worcestershire.

THE Board of the Royal Waterloo Hospital for Children and Women in Waterloo Bridge Road, London, whlch is now being rebuilt and enlarged, is establishing a Public School Ward. The idea is to place the name and crest of the school endowing them over the cots. The estimated cost of each cot is thirty guineas annually, and we hope that many public schools will avail themselves of the opportunity of associating themselves with so good an object.

THE Board of Education announced some months ago that they hoped to be in a position to issue, towards the end of the present year, regulations for the registration of teachers in the supplemental registers established by the schedule to the Order in Council of March 6th, 1902. The points which need the consideration of the consultative committee prove, however, to be more numerous and complicated than was anticipated, and it will be necessary in consequence to defer the issue of the regulations to a date which cannot yet be determined, but which will certainly be considerably later than the one which was originally contemplated.

THE Civil Service Commissioners have announced that an examination for entry of Engineer Cadets in His Majesty's Navy will commence on March 15th, 1904, at London, Portsmouth, Devonport, Edinburgh, and Dublin. Candidates must have been born in the period November 1st, 1887—November 1st, 1889, both days inclusive. Applications for permission to attend the examination must be received by the Secretary, Civil Service Commission, on or before February 15th, 1904. The examination will be in the following subjects: —arithmetic; algebra (to simultaneous quadratics); Euclid I.-III.; handwriting; dictation; composition; geography; English history (Norman conquest to present times); French; mechanics; and *either* chemistry *or* physics. Every candidate is supposed to offer the above subjects; he may also offer drawing (freehand *or* geometrical) and one of the following, viz., additional mathematics, German, or Latin. The fee for admission is £1. The Admiralty issue an interesting document giving particulars as to the prospects, expenses, further examinations, &c., of cadets. The Civil Service Commissioners supply copies with the forms of application for admission to the examination.

Teachers who propose to join one of the Correspondence Clubs for the study of pedagogics described in our last issue should send their names as early as possible in January to Mr. A. T. Simmons, care of the Editors, THE SCHOOL WORLD.

SCOTTISH.

LORD BALFOUR OF BURLEIGH in his Edinburgh address, referred to in last month's columns, stated that he had left on record for his successor the rough draft of a scheme which would, if carried into effect, cure most of the weaknesses in the Scottish educational system. The meagre outline of this scheme which Lord Balfour gave to the meeting served only to mystify the public as to the real nature of the proposals, and to whet their appetite for more specific information. In issuing this address in pamphlet form, Lord Balfour has wisely taken advantage of the opportunity to make his meaning and intentions clear. As a result, it is possible to forecast with some degree of certainty the main features of the forthcoming Education Bill for Scotland, because the present Secretary for Scotland has all along been closely associated with Lord Balfour in his educational policy.

A CAREFUL study of the revised address shows that the Bill will provide for the following:—(i.) An enlarged area of administration—probably co-terminous with the present county districts. (ii.) The members of this body to be elected *ad hoc* on the same roll and with the same franchise as the county and municipal councils. (iii.) This body to have in its power the provision and financial control of all classes of school, and the appointment, promotion and dismissal of teachers. (iv.) A *county* authority—its constitution and method of election not specified, but probably the county council—for the purpose of co-ordinating and systematising the whole provision for higher education. (v.) The existing parish council to be utilised for the detailed management of the purely elementary branches of education.

THE annual business meeting of the Educational Handwork Association was held in the Heriot Watt College, Edinburgh. Dr. John Gunn presided over a good attendance of teachers and others interested in the aims of the Association. Dr. Alexander Morgan, Principal E. C. Training College, Edinburgh, was elected president for the ensuing year, and Dr. John G. Kerr, Allan Glen's School, Glasgow, was appointed Secretary to the Board of Examiners.

THE shadow of another Cockerton case, which has been hanging over secondary education for a few months, has once and for all been dissipated. Attention was directed in these columns some time ago to a judgment of Sheriff Sym, which decided that a school board had no statutory warrant to levy (through the parish council) school rates for the provision of education in a higher-class school. This decision, if upheld, meant paralysis of educational effort in half the higher-class schools of the country. Sheriff-Principal Jamieson, to whom the case was appealed, has recalled the interlocutor of his sheriff-substitute and decided that higher education is a proper charge on the rates. The learned Sheriff, in an interesting "Note," points out that there is nothing in the history of Scottish education to confine school boards to providing only

elementary education. That is the compulsory duty with which they are charged, but it is within their option also to levy rates directly for secondary education. He points out that this is entirely in accord with Scottish educational traditions, as parish schoolmasters, long before the days of school boards, carried the most promising of their pupils far beyond the limits of what is known as elementary education. The importance of this judgment cannot be over-estimated. School boards in the past have been chary of using public funds for the encouragement of higher education, as the bearing of the law on the subject was so very ill-defined. Now that education in Scotland has been declared to be, in its claims on the public purse, one and indivisible, it is hoped that boards will take a more enlightened view of their duties and responsibilities in regard to higher education.

THE annual general meeting of the Classical Association was held at Glasgow University. The secretary's report showed that the Association consisted of 168 annual members and 25 life members. Prof. G. G. Ramsay, Glasgow University, was elected president, and Mr. W. Lobban, secretary. Prof. Ramsay, in his presidential address, said that classical men knew what a splendid instrument for opening, stimulating, and furnishing the mind could be forged out of well-conducted classical study. At the same time, they had an open mind to all other subjects of human study, and would exclude none of them provided they fulfilled the fundamental conditions on which all genuine education depended. Under wise and thoughtful treatment there was almost no subject of human knowledge which might not be made into an effective instrument of education, just as there was no subject which might not be rendered useless for its purposes by dull and mechanical treatment. He had no faith, however, in the prevalent idea borrowed from America that everything must be made easy and pleasant to the learner. No mental mastery could ever be acquired except by downright hard effort, by looking difficulties in the face and by discovering that the mind possessed within itself the means of overcoming them.

PROF. PHILLIMORE, Glasgow University, read a paper on "The best present lines of defence for classics." The professor in an interesting paper showed that the basis of conflict between themselves and those who had raised the cry of "down with classics" was simply a liberal education *versus* a utilitarian education. Their opponents desired an education that paid and not an education that educated. His desire was to suggest lines of tactics against the increasing aggressiveness of what he might call the commercial element. Modern languages had been made the catspaw of the commercial anti-educationists, and they should get their modern-language friends to join with them in resisting this attack not on classics but on scholarship in general. The ideals of the classical and modern-language teacher were the same, literary and human training—a subject treated according to its deserts and not according to its market. Dr. John G. Kerr, Allan Glen's School, afterwards read a paper on "Latin in a Science School."

UNDER the auspices of the British Child-study Association, Dr. John Gunn gave a series of helpful and stimulating lectures on the subject to the teachers of Edinburgh and district. The attendance was satisfactory throughout, and showed that the subject of child-study was receiving serious consideration from teachers. In his concluding address Dr. Gunn contended that a practical course of child-study should form part of the training of all teachers. The study of psychology and ethics, which was now taught in all their training colleges, afforded an excellent theoretical basis for this study. But their application to pedagogy had been almost entirely ignored. The so-called educational science often resolved itself into a discussion of curriculum, methods and results, whereas a true science of education could only be based on thes tudy and observation of its fundamental data—the child. Dr. Gunn showed that America was far ahead of this country in its provision for the systematic treatment of the subject. The Chicago Board of Education had instituted a special department for child-study, and most of the American training colleges had given child-study a place on the curriculum.

AT a meeting of St. Andrews University Education Society, on December 7th, Dr. D. Fraser Harris delivered an address on "The Relation of Physiology to the Teaching Profession," in which he said that with some matters of conduct physiology had close relations. Education was defined as the scientific guidance of the growth of the physical, intellectual, and moral faculties of the human organism. It can create nothing except the appropriate environment for body and mind, since disposition, temperament, capacity, are inherited attributes depending ultimately on the physico-chemical properties of the molecules of protoplasm. In the narrower sense, education is the superintending of the functional requirements of the sensory and motor cerebral centres, the opening up of new paths for as many incoming impulses as possible, the establishing of inter-cerebral commissural paths, and the completion of these nerve-arcs by due correlation to the avenues for efferent impulses. A knowledge of physiology on the part of the teaching profession is absolutely necessary if the physical defects revealed by the Commission on Physical Education and on the state of recruits for the army are to be remedied. Prof. Edgar, of the Chair of Education, presided, and in emphasising the importance of the subject in the teacher's professional training, showed how the results of the recent researches on fatigue were already helping to promote the health not only of the pupil but of the master, and to improve school efficiency.

IRISH.

THE conference between the Intermediate Board of Education and the representatives of the Roman Catholic and Protestant Headmasters' Associations is understood to have been successful in clearing up some of the difficulties in the way of a smooth working of the new system. At its conclusion the Board asked the representatives to procure them some further information on the following points: (1) whether the conditions of passing would be reasonable, if the declaration before the examination of a selected group be not insisted on; (2) if not, whether a pass in five or four subjects should be sufficient for a pass as a whole, and with what limitations; (3) should the marks in three or only two subsidiary subjects be counted for exhibitions and prizes; (4) should definite text-books be prescribed in English history; (5) should practical science be compulsory in the first two years, *i.e.*, in the preparatory grade; (6) how far the requirements for science and drawing under the new system have caused inconvenience in the arrangement of time-tables and additional expense. The associations have consulted their members on these points in order to collect the information. There seems little doubt that some of the regulations which have cramped and hindered the working of the new system will be considerably relaxed for the year 1904-5.

IT seems now definitely settled that there will be no Catholic University scheme brought before Parliament next session. It has been stated that it will be introduced in the following year; but this is a long way off, especially in the present condition of party politics. The Lord-Lieutenant is, however, to visit various parts of the country, and deliver speeches pointing out that religious jealousy and sectarian partisanship are peculiar to

Ireland, and are the chief causes which militate against her progress. It is assumed that in this way he may be able to reconcile Protestants to the idea of a Roman Catholic University. The omens at present seem unfavourable to such a result. Trinity College has put out feelers in two directions. The Board approached his Eminence Cardinal Logue, the head of the Irish branch of the Roman Catholic Church, and offered to provide religious instruction for Roman Catholic students by members of their own Church, on precisely similar terms to those on which religious teaching is now given to the students of the Church of Ireland and of the Presbyterian Church, the teachers to be nominated either by himself or by the Roman Catholic Archbishop of Dublin. The answer was simply a direct refusal. A reference on similar lines made to the moderator of the Presbyterian Church has been referred by him to the General Assembly, which will not meet for some time, he himself having no power to answer for the Church as a whole.

THE Catholic graduates and undergraduates of Ireland—to whatever university they belong—have formed an association with the following objects: (i.) to organise and voice the claims of the Catholic body for equality in university education as laid down in the declaration of the Catholic laity in 1871, without, however, declaring in favour of any specific scheme; (ii.) to create a common forum of opinion for educated Catholics; (iii.) to agitate against the further postponement of provision to meet the wants of Catholic university education in Ireland; (iv.) to interest the Catholic public in the ulterior development of university education.

MR. E. P. CULVERWELL has during the past term been delivering a series of lectures in Trinity College on the principles of psychology as applied to the art of teaching. These lectures have been open to the public and well attended, and will be continued during the Hilary term.

ARRANGEMENTS had been made by the authorities of Alexandra College for the Hermione lectures to be delivered in November by Miss Jane Harrison, but owing to her ill-health the lectures fell through, and her place was taken at short notice by Mr. McColl, of Oxford, who delivered a series of interesting lectures on Constable, Turner, Hogarth, and Rossetti.

A LECTURE for teachers was delivered in December in the Royal University, under the auspices of the Teachers' Guild, by Mr. Geo. Fletcher, senior inspector of the Department of Agriculture and Technical Instruction, on the teaching of geography.

IT would be well if the English Board of Education would make some public announcement of the principles upon which they are acting in recognising some Irish schools and not others. Most Protestant schools are anxious to be recognised, and their teachers to be registered; some have been recognised without payment of any fee, but those that have not been recognised hesitate in many cases to pay the fee of £4 4s., which is demanded as a precedent to inspection for purposes of recognition. Some declaration from the Board of Education seems wanted to elucidate the situation.

WELSH.

PROF. PHILLIPS, who has been Acting Principal of the University College of North Wales, Bangor, during the absence of Principal Reichel in the United States (as a member of the recent Mosely Commission), has recently stated his views on the teaching of Welsh. He is of opinion that it is pitiable that a Welsh boy should not be able to systematise and correlate the knowledge he already possesses of the Welsh language. A training in the Welsh, he argued, might not only be made as good mental discipline as in any other languages, but also in after-life will be a source of delight to use his mother tongue accurately. If something must go to make room for Welsh, Prof. Phillips broadly hinted his view that, in the majority of cases, Latin might well be sacrificed.

IN Denbighshire, considerable progress can be reported in the number of pupils. When that County Governing Body was in its first year of existence, there were four schools with 190 pupils. In 1903 there are eight schools with 644 pupils. At the last prize distribution, it was announced, in connection with the Girls' County School at Wrexham, that at the opening in 1896 there were 22 pupils, whereas in 1903 there are 132.

THE determination of the Welsh County Councils to refuse any grants from the rates to the voluntary schools has met with spirited protests. In Merioneth, for instance, the Hon. Col. Wynn has urged before the County Council that up to 1870 primary education was practically conducted by the voluntary schools, that broadly the majority at that meeting, together with such men as the late Mr. T. E. Ellis, and even Mr. Lloyd-George, were educated in voluntary schools. And now, in Merioneth, he added, Church people were asked to pay an 8½d. rate, and were denied the 1½d. rate which would suffice for their schools. In Montgomeryshire, a strong protest was lodged by a noncomformist. There were, he said, in the county sixty non-provided schools, two-thirds of the total number of schools. If the Council said those schools could be efficiently maintained on the £2 grant from the Board of Education, why could not the thirty other schools of the County Council be kept in the same way? In the end nineteen members voted against rescinding the former resolution (to withhold grants from the rates to the voluntary schools)—sixteen for rescinding the resolution.

AN appeal has been made to Lord Londonderry with regard to the Carmarthenshire County Council's refusal to "interfere with the management of the voluntary schools within its area," beyond passing on to them all grants received from the Board of Education in respect of the voluntary schools. Lord Londonderry's reply is that the Government "will certainly not hesitate to take at the proper time such steps as are necessary to prevent the objects of the Act from being defeated."

THE Chief Inspector's Report for last year of the Welsh Intermediate Schools has been exciting considerable interest. The number of pupils in the ninety-five county schools were, for the year 1902-3, altogether 8,789. In the year 1901-2, they were 8,322, and in 1900-1, 7,668. It is of interest to note that, of the 8,789 pupils in the county schools, 6,502 pupils have come from the elementary schools, 524 from higher-grade elementary schools, 356 from public secondary schools, and 1,165 from private schools. Of the last-named number 734 were girls.

THE following are three of the most suggestive points of the report:—(i.) If the schools are to accomplish all that is expected of them it is essential that the maintenance funds should be increased by an amount equivalent to £5 per pupil, *i.e.*, over £40,000 a year. (ii.) In the matter of differentiation of schools a very useful beginning might be made if, in those districts in which secondary schools appear to be too near each other, some arrangement might be arrived at by which the curriculum of one school might be supplemented by that of another school. (3 With the view of checking premature withdrawal of pupils, the Chief Inspector suggests that augmentations should be made to scholarships each year. It would probably be better, instead of giving, for example, £3 a year for three years, to give £2 the first year, £3 the second, and £4 the third.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Petits Contes de Fées. Edited by W. G. Hartog. 30 + xii. pp. (Black.) 6*d.*—A convenient edition of well-known tales, such as "Tom Thumb," "Snow-white and Rose-red," &c., printed in clear type and almost free from clerical errors; we have noticed *on dit te prendra* (?) and *reconnait* on p. 25. Some of the tales are "adapted" from Grimm; this is easily seen, for instance, in *rouges comme le soleil couchant*, which does duty for *rot wie Blut*. The illustrations are of all sorts, modern black-and-white, poor old woodcuts, and even a facsimile of a mediæval design. The artistic effect is distressing. There are a few English notes and a vocabulary.

English Passages for French Prose for the use of Middle Forms. Edited by A. G. Perman. viii. + 92 pp. (Blackie.) 1*s.* 6*d.*—This selection of passages is quite excellent. They are not too long, and not over-annotated; there is plenty of variety. The book is well and carefully printed.

French Phrases with Exercises. By H E. Haig Brown. viii. + 66 pp. (Williams and Norgate.) 1*s.* 6*d.*—We do not know why this book was published: it supplies no long-felt want. It is unsystematic, often misleading and altogether inadequate. The first part is a skeleton grammar, often too brief to be of real service. There are numerous misprints and actual errors (*e.g.*, *s'il fait beau et que vous êtes ici, avoir beau de faire quelque chose*). The second part consists of "exercises," *i.e.*, detached sentences. It is difficult to make a choice; but to give an example of the editor's taste we quote a few: "He flatters himself he will find me, but he will not find me if I hide under the bed." "He was called John, according to the command of the angel who announced his birth." "They sell beer here. How much? Eightpence a quart." "People buy at this stationer's pens, ink and enough paper." "The stone which the builders have refused has become the keystone."

Phrases and Dialogues with Translations in Cape Dutch. By J. F. Van Dordt. 111 pp. (Williams and Norgate.) 2*s.* 6*d.* net.—After twenty-seven pages of preliminary grammar, we get in this book a series of dialogues of the usual nature, arranged according to no plan. Whether Cape Dutch will exist for many more generations is a moot point, but certainly we cannot imagine any one gaining much useful knowledge of it from the present compilation.

A Second German Book. By H. S. Beresford-Webb. xii. + 250 pp. (Longmans.) 3*s.* 6*d.*—A book for middle forms and intended to follow the use of the author's "First German Book." It is a grammar, exercise and reading book combined, with copious and useful vocabularies. A noticeable feature is the prominence given to the order of words in sentences, which commences at the beginning of the first lesson. Grammatical unity has been to some extent departed from in the arrangement of the lessons, but we agree with the author that this is a commendable sacrifice for utility. It may further be noted that Mr. Beresford-Webb has adopted those reforms in spelling now made compulsory in Prussian schools by the Prussian Ministries of Education. The book is worthy in every respect, and is highly to be recommended.

Levin Schücking, Die drei Freier. Edited by O. Heller. xxiii. + 81 pp. (Ginn.) 1*s.* 6*d.*—We cannot agree with the editor in regarding this text as "adapted to the needs of students who have spent rather less than two years on their German"; it may be—in the States. A book in which the Wandering Jew, the Wild Huntsman and the Flying Dutchman are suitors for the hand of a married lady in Augsburg in the year 1700 is obviously unsuitable for class-reading, especially when the language is pseudo-archaic. We have no complaints to make against the notes; only here and there a little German pedantry pierces through, and we certainly dislike "comicry" and the exploded *Rückumlaut*.

Gil Blas in the Den of Thieves. Arranged from Lesage (*sic*). Edited by R. de Blanchaud. 48 pp. (Arnold.) 9*d.*—Twenty-nine pages of text, divided into as many sections, describe some of the strange adventures of the Spanish rogue, which will no doubt amuse many a reader. The notes are mostly grammatical; the vocabulary is not complete, which should have been stated. The book may be recommended for the purpose of unseen translation or for private reading.

Classics.

Pro Patria, a Latin story for beginners, being a sequel to "Ora Maritima," with grammar and exercises. By E. A. Sonnenschein. x + 181 pp. (Sonnenschein). 2*s.* 6*d.*—We had occasion to praise Prof. Sonnenschein's "Ora Maritima" in a previous issue of this magazine; and we are glad to see a sequel, taking in all four conjugations of verbs, and enough of the other parts of grammar to bring a simple author within reach. The earlier sections give a sketch of British history in connection with a visit of the hero to Richborough Castle; the rest is an account of the Boer War of 1900-1902. The events are elucidated by maps and plans, and by some figures of coins which are reproduced with great delicacy and clearness. This book is well done, and meets a distinct want.

Livy. Book VI. Edited by F. H. Marshall. xxxiv + 171 pp. (Cambridge University Press.) 2*s.* 6*d.*—This edition is full of sound and useful information, and is well suited for the use of the sixth-form boy; both introduction and notes are above the average. We have noted but few of those elementary translations (as *venire*, p. 108), which the school annotator loves; and, if there is a good deal in the notes which we think would be better learned from dictionaries by the boy himself, there is also new matter, and evidence of a wide acquaintance with the questions raised. Text and summary are reprinted from Mr. Stephenson's edition of this book.

Matriculation Selections from Latin Authors. By A. F. Watt and B. J. Hayes. xi. + 329 pp. (Clive.) 2*s.* 6*d.*—The Correspondence College has produced a book to suit the new requirements of the London Matriculation, now that set books have been discontinued. It contains a brief sketch of Roman literature (6 pp.), history internal and external (21 pp.), the magistrates and their functions (4 pp.), and the machinery of law and government (6 pp.), with a section on money, the army (13 pp.), private life (5 pp.), morals and religion (5 pp.), and the calendar (2 pp.). These pages are packed with facts, and every fact is useful for examination purposes. The selections are taken from Aulus Gellius, Eutropius, Nepos, Phaedrus, Livy, Caesar, Cicero, Catullus, Horace, Virgil, Tibullas, and Ovid; each author's work is preceded by a short account of him, and there are finally notes and a vocabulary. It is quite an interesting selection, and well done; we much prefer it to the annotated authors of this series, and so far the revised regulations for the Matriculation seem to be justifying themselves. The danger remains, however, that students may confine their Latin studies to this book, and never see a complete edition of any part of any single author.

Selections from Tibullus and Others. Edited by J. P. Postgate. lii. + 229 pp. (Macmillan.) 5*s.*—Dr. Postgate is amongst the first Latin scholars of this country, and his scholarship is a warrant for confidence in this edition. It is admirably done. The introduction is full of learning, and more, of insight and good criticism. A good deal of this will be beyond schoolboys, but scholars will be interested in the careful examination of the character and authorship of the "Messalla" poems, including the pretty little letters of Sulpicia—"the only love poems by a Roman lady which have come down to us"—and the poems of Lygdamus. There is a table of pentameter endings in Roman elegy, which presents in one page the fruit of much labour, and will be useful to metrists. The poems selected are not all such as would interest schoolboys, but those of Tibullus at least have the merit of being simpler than Ovid, and with judicious omissions the book would do very well for a first Latin verse-reader. The notes are good. Appendices deal with (1) the question, Was Tibullus the Albius of Horace? (2) the Sibylline Books; (3) iii. 19 (=iv. 13); and (4) the text. There are some illustrations, well chosen, but not all well reproduced.

Greek Syntax. By G. A. Floyd. viii. + 69 pp. (interleaved.) (Longmans.) 3*s.* 6*d.*—The special value of this book lies in the interleaving, which makes it possible, as in the case of Mr. Jones's "Latin Syntax," for the pupil to add examples from his own reading as he goes along. Thus it becomes a real help to teaching. We believe that some such book as this is necessary for the beginner, and we do not know of any other Greek syntax now on sale which has this useful feature. The matter is simply and clearly presented, but Mr. Floyd seems to hesitate between two principles of classification. With nouns, as usual, the various uses of each case are grouped together; with verbs, the moods are not treated in the same way, which is the most useful practical way, and yet on one page three uses of the subjunctive and one of the optative are tabulated. What we need is a double classification: (1) by case and mood, (2) by logical sense. The book is well printed.

Northern Mythology. By Friedrick Kaufmann. xii. + 106 pp. (Dent's Temple Primers.) 1*s.* net.—This is a useful little book, full of learning, and yet (marvellous to relate in a German work) quite interesting to read. There are no startling novelties to be found here—a point in which this book compares favourably with one other at least of Dent's Primers—but Mr. Kaufmann is prudent enough to confine himself to what will be generally accepted. For the unlearned, some assistance in the pronunciation of names would be welcome, but otherwise the book is well within his comprehension; while its accuracy makes its useful to the serious student. A short bibliography is appended. The translator, Miss Steele, has done her work satisfactorily, but we have noted one blunder in the insertion of *and* on p. 4, line 21.

Edited Books.

Scott's Marmion. Cantos I. and VI. By M. Macmillan. 91 + xviii. pp. (Macmillan.) 1*s.*—This edition is limited to two cantos, with notes and an introduction, and in all respects is well done. The editorial repetition of the view sometimes expressed, that Scott is the second poet of battle fields in literary history, and that Homer is the first, is well enough as a chronological fact, but to attempt to make out that Scott is a British Homer (though Mr. Macmillan does not unduly emphasise this opinion) is "wasteful and ridiculous excess." The notes are praiseworthy.

Shelley's Adonais. By W. M. Rossetti and A. O. Prickard. 162 + viii. pp. (Clarendon Press.) 3*s.* 6*d.*—This is a second edition of a well-known work. In it the classical sources from which many passages and ideas were derived by Shelley are carefully examined. For so short a poem the wealth of editorial criticism lavished upon it is remarkable, but it shows what the ideal of an editor's ambition ought to be. The passages which were cancelled by Shelley are also included.

Richard II. By W. Keith Leask. (Dent.) 1*s.* 4*d.*—This is another of Messrs. Dent's successful volumes of Shakespeare's plays. The only fault we can find with it is in a matter previously noted, namely, that there is no system of paging. Numbers are supplied to the introduction and the notes, but none to the text of the play. Otherwise the volume is of great attractiveness. The six illustrations by Miss Carter are admirable; so are the numerous woodcuts so generously sprinkled among the notes. This unique feature adds immensely to the value of this series and much enhances the value of these notes themselves, and they are really valuable in any case. In the glossary they constitute an even more unique feature. Altogether an admirable edition.

Children of Odin. By E. E. Speight. 166 pp. (Horace Marshall.) 1*s.*—Mr. Speight is becoming well known, as he should be, for good new work in the matter of English Literature for Schools; and for a long time he has shown us that the old Sagas provide excellent reading material. This little book, containing the death of Balder, Gretter the Strong, and the Wooing of Hild, may be taken as a continuous reader. The three little books, Froissart, Odin, and Chaucer, are admirable for the teacher who knows her business (or is it his?): but why did the editor, or translator, add an appendix on the pronunciation of simple English words? The illustrations are very good.

Longfellow's Evangeline. By H. B. Cotterill. xlv. + 92 pp. (Macmillan.) 1*s.* 9*d.*—Any edition of this poem must of necessity reopen the old controversy about hexameters and English verse. It ought to be said that Mr. Cotterill has managed his task so discreetly that the "Remarks on Evangeline" which are prefixed to the text make exceedingly good reading for teachers. The part of these "Remarks" which deals with the history of the poem in Longfellow's life is interesting; and the conclusion to which Mr. Cotterill comes, that it is probably impossible to naturalise hexameters in English verse, is undoubtedly sound, though he allows Longfellow no more than his due in uniquely adapting it to the requirements of his subject in this poem. The notes display a great acquaintance with much out-of-the-way information.

The Reigns of David and Solomon. By George Carter. 102 pp. (Relfe.) 1*s.* 6*d.*—This volume deals with the contents of the Second Book of Samuel and the first twelve chapters of the First Book of Kings, and follows the admirable plan of previous issues of the same kind. The notes are valuable, and clearly put; but the historical outline of the reigns of David and Solomon is even better. An account of places and subsidiary personages also goes to the making of this little work, which is printed with every regard to the ease of the teacher in using it. Its convenience is as marked as its practicability.

History.

Dictionary of Historical Allusions. By T. B. Harbottle. 306 pp. (Sonnenschein.) 7*s.* 6*d.*—It contains no preface, and we therefore cannot tell why the scope of this work is smaller then the title would lead us to expect. So far as we can judge, its range is mainly within the later mediæval and modern times, and within European countries and their colonies. Naturally there is a large proportion of English matters. It is generally fairly correct, although the proof reader has allowed mistakes

in century dates without rectification, but some entries are misleading, sometimes remarkably so; *e.g.*, the Provisions of Oxford are said to be "the first public document issued in the English language"; "Place Bill" is described as becoming law in 1743, as if there were but one; the Emperorship of Charles VII. is ignored; the title of "Great Commoner" is given to the *younger* Pitt; the Protectorate of Cromwell is described as the "Fifth Monarchy" of the idealists; and the English documents of 1297 are misunderstood. There is an index.

The Struggle for Sea Power. By M. B. Synge. vi. + 238 pp. (Blackwood.) 1*s.* 9*d.*—This is "Book IV." of the "Story of the World" as reviewed in these columns last September. Its subject is the history of the British Empire 1745-1815, and a few kindred matters.

The British Nation. By G. M. Wrong. xxxii. + 616 pp. (Appleton.) 5*s.* net.—This contains the usual history of England from prehistoric times till the present day. The ordinary chapters on the mediæval history are not very good, but the book improves in the later parts, and the best chapters throughout are those on "social" matters. To each chapter is prefixed a short account of European matters, too short to be of much use generally. There are bibliographies to each period, generally of handbooks useful for teachers. There are illustrations, maps, and an index.

Historical Albums. Period 1272-1399. (Horace Marshall.) 6*d.* each. There are six selections of pictures, devoted respectively to ecclesiastical architecture, domestic architecture, Social Life (2), Portraits of Persons, Scenes and Incidents. Each book contains about twenty careful reproductions of mediæval

St. Ethelbert's Gateway, Norwich, 1273-1278.

pictures, and they are put into this cheap form in order that the pupils may possess copies. We think they are admirably adapted for their purpose. By the courtesy of the publishers we are enabled to produce one of the illustrations, but this naturally fails to give an adequate idea of the variety here offered.

A History of Modern Europe. By M. Whitcomb. xii. + 361 pp. (Appleton.) 4*s.* 6*d.* net.—The author avowedly devotes more space to the nineteenth century than to the four centuries preceding. Consequently this may better be described as a history of the last century with introductory chapters. There are references to other books, generally manuals. There are many illustrations of various kinds, a rather scanty index, tables of events, and, to each chapter, what the author calls a "Source Review." What this phrase means we do not know, for it is not a review, nor is it always a "source" even in the most extended use of the word. The story is clearly and correctly told.

Geography.

The Autograph Hand Maps. (Darbishire & Stanford.) 1*d.* each.—This is a series of "outline" maps, comprising the continents, the separate parts of the British Isles, the chief countries of the world, and several useful regional maps under such titles as "The Danube Lands" and "The Mediterranean Region." Their special feature is the insertion of hill-shading, with a view to impress upon the user the importance of clearly understanding the configuration of the country on which he may be working. They are excellent specimens of cartographic art, and should be useful in the hands of the elder pupils of a school. Whether the younger fraternity could use them with equal profit is another question. To our thinking, the "outlines" contain too much. A map, for instance, which contains all the mountain regions shaded, and all the chief rivers indicated along with their tributaries, does not give much opportunity for the insertion of names which shall stand out neat and clear to the magisterial eyes. We tremble to think of the autograph "Scotland" after exploitation by Jones iii., of the Lower Fourth. Again, the boy or girl who should attempt to insert the names of all the eighteen streams, marked on the map of Italy as descending direct into the Adriatic from the eastern side of the Apennines, would, we fancy, have been engaged in the fruitless task of learning non-essentials. And yet, we suppose, the eighteen are there to be learnt. Altogether, these maps are suitable rather for earnest students of geography than for the average schoolgirl or schoolboy. They are, indeed, quite outside the ordinary conceptions of an "*outline*" map.

Map of the World on an Equal Area Projection. (Darbishire & Stanford.) 6*d.*—The projection of this map, which distinguishes it from the numerous British Imperial maps of the day, is ordinarily known as Mollweide's, or the homolographic projection. Invented by Mollweide in 1805, it portrays the earth as an ellipse, representing the equator as the major and the central meridian as the minor axis. This necessarily distorts the shape or form of some countries, but preserves the scale throughout. Thus a square inch on any part of Messrs. Darbishire & Stanford's map represents the same number of square miles, 1,600,000. The great advantage gained is, of course, the indication of the empire's true relation in point of size to the other countries of the world. This is as essential to an understanding of many of the great questions in the political world as it is to a correct knowledge of comparative geography in the scholastic. One requires, however, time to become used to the curious shapes taken on themselves by North America, East Asia, and East Australia under this "equivalent" projection. Once get over this, and there will be ruin for the school "Mercator," with its far more erroneous errors in magnitude. The editors of the "equal area" map are to be congratulated on their praiseworthy attempt to bring about so portentous a *débâcle*. In addition to the map, the publishers have inserted in the corners certain useful statistics relating to the values and imports of food stuffs into the United Kingdom in 1902.

Descriptive Geography from Original Sources. Australia and Oceania. By F. D. and A. J. Herbertson. xxvi. + 221 pp. (Black.) 2*s.* 6*d.*—The average teacher of geography soon comes to the end of his resources in attempting to impart something of reality to his pictures of life in lands other than his own. The editors of "Descriptive Geography from Original Sources," of which series the present volume is the last, have done good work in presenting extracts from the works of well-known geographers and travellers. But equally valuable, from the teacher's point of view, are the geographical introductions and the bibliographies with which each volume is furnished. Every teacher should have the series by him for reference.

Science and Technology.

Elementary Experimental Science. Physics. By W. T. Clough. Chemistry. By A. E. Dunstan. vi. + 239 pp. (Methuen.) 2*s.* 6*d.*—The authors provide a course of elementary physics and chemistry suitable for students taking the Junior Local examinations of the Universities. The book contains both practical work and descriptive reading. The experiments are mixed in character; some are suitable for the pupil to perform himself, others rather for lecture purposes. The course of study is a satisfactory one, and, being the work of practical teachers, will no doubt meet the wants of pupils for whom it is intended. It is a great pity that so much of the book is printed in such small type.

A Little Brother to the Bear, and other Animal Studies. By William J. Long. Illustrated by Charles Copeland. xix. + 280 pp. (Ginn.) 7*s.* 6*d.*—Mr. Long always writes charmingly of animals and their ways, so that it is enough to say that his latest book maintains the high character of those already noticed in these columns. The absorbing interest of the text, together with the beauty and excellence of Mr. Copeland's numerous illustrations, are together enough to ensure the success of the volume.

Experimental Physiography. Section I. By Pollard Wilkinson. vii. + 335 pp. (Simpkin, Marshall.) 3*s.* 6*d.*—Following the syllabuses of the Board of Education in the first section of physiography and of elementary science for the King's Scholarship examination, Mr. Wilkinson treats of elementary mechanics, heat, light, magnetism and chemistry. Nearly 350 experiments are described, and the student who performs these intelligently cannot fail to gain a good working knowledge of the fundamental principles of physics and chemistry. There are 246 illustrations, but they are by no means satisfactory; they are often too sketchy to be of any value in elucidating the text—figures 225 and 226, for instance, will give a student who has not seen an aneroid barometer no idea of the instrument. An unusually large number of numerical exercises is provided and answers are supplied. The concluding chapters on pressures in liquids and gases seem to be out of place; logically they should follow chapter iii. These criticisms notwithstanding, the pupil teacher who masters the contents of this book may with confidence present himself for the King's Scholarship examination in elementary science.

Outline of Course in Natural History for Training College and King's Students. 67 pp. (Natural History Department, Marischal College, University of Aberdeen.)—This outline of the work done in the summer class conducted by Mr. John Rennie, under the supervision of Prof. J. Arthur Thomson does not differ materially from previous issues, which have been noticed in THE SCHOOL WORLD. As a storehouse of material and suggestions for the preparation of lessons in nature-study it is stimulating and valuable in the extreme. All teachers should endeavour to secure a copy.

Mathematics.

Exercises in Theoretical and Practical Geometry. By R. B. Morgan. iv. + 96 pp. (Blackie.) 1*s.*—These exercises, adapted to the recent changes in the programmes of geometry, can be recommended as suitable in every respect. They are in the main very easy, and are well arranged; they contain many examples that will (or, at least, that *should*) awaken the pupil's interest and stimulate his intelligence. Perhaps more questions on the degree of accuracy that calculations based on measured data are likely to attain might have been given; but, important as such questions are, they are doubtless of an order of difficulty that many teachers think too great for mere beginners.

Graphs: or the Graphical Representation of Algebraic Functions. By C. H. French and G. Osborn. vii. + 64 pp. (Clive.) Paper cover, 6*d.*—This little book is stated to be a Supplement to "The New Matriculation Algebra," and to be primarily intended for students preparing for London Matriculation Examination, though it contains matter beyond that range. The first chapter treats of statistical graphs, while the rest of the book deals with the graphs of algebraic functions. The descriptive matter is clearly expressed, and the diagrams are very well drawn, though we think the practice of marking points merely by heavy dots is not to be commended. The exercises are numerous, and form with the text a very good introduction to the subject indicated by the title. The price is very low, but we have found the size of type adopted in considerable portions of the book to be somewhat trying to the eyes.

A Manual of Practical Mathematics. By Frank Castle. xi. + 541 pp. (Macmillan.) 6*s.*—It is impossible in a short notice to do justice to a book that is so full of matter as this manual. Assuming but a very slight acquaintance with elementary algebra, it brings before the reader subjects so wide apart as equations of the first degree in one unknown and differential equations, the definitions of the trigonometric ratios and Fourier's theorem, the areas of simple rectilineal figures and the processes of integration, the binomial theorem and Taylor's series. In such a wide range it is inevitable that there should be inequality of treatment, and that rigour of demonstration should not be very much insisted upon. Some parts of the book are exceedingly good, specially the treatment of graphical methods. Other parts are so slight that they do not seem worthy of the place they occupy; for example, the pages on the binomial theorem, the exponential and logarithmic series and Taylor's theorem. But in spite of such defects, which might to a considerable extent be remedied in another edition, the manual is full of suggestiveness and introduces the student who has a fair acquaintance with mechanics and physics to many of the most important applications of the higher mathematics to these subjects. Though the book is very easy reading for anyone who has a knowledge of the subject, it is not unlikely that the beginner will require the guidance of a teacher if he is to get full advantage of the very rich stores here provided.

Elementary Graphs. By W. M. Baker and A. A. Bourne. 34 pp. (Bell.) 6*d.* net.—This chapter on Graphs is taken from the author's "Elementary Geometry" (Books I.-III., fifth edition). It is well printed and contains many examples suitable for beginners. In §§ 16, 17, the intervals for x seem to us too great; to graph x^2 from $x = -1$ to $x = 1$ with the values -1, 0, 1 of x requires the pupil to take too much on trust, even though the graph is extended by using the values $+2$, $+3$, $+4$ over the range for $x = -4$ to $x = 4$. We think, too, that the pupil may be misled by the method adopted in § 17; the point (1, ·1), for example, should be (1, 1). The paper length of the ordinate may be ·1, but the ordinate is 1.

Algebraical Factors and Methods of Using Them. With Answers. By H. R. Birch. viii. + 212 pp. (Birmingham: Davis and Moughton.) 2*s.* 6*d.*—The author has put much honest work into his book, and there are doubtless teachers to whom it will appeal; there may even be private students, lacking the guidance of skilled teachers, to whom it may be a real benefit. Yet we cannot but think that the book is not suitable for school work. Factors are, of course, important, but skill in finding factors should rather come as the natural issue of a reasonable teaching of multiplication than be fostered by an elaborate system of rules, which after all only apply in a comparatively limited field. In the applications the author shows himself to be alive to the usual errors of beginners, and he has brought together a good collection of miscellaneous exercises, but we do not think that, taken as a whole, the book is worthy of the pains the author has bestowed upon it.

Miscellaneous.

Fifty-two Sundays with the Children. A series of Sunday-morning talks. By the Rev. James Learmount. 280 pp. (Allenson.) 3*s.* 6*d.*—The distinguishing characteristic of these addresses is simplicity; indeed, they seem to be intended more particularly for young children. The talks are interesting and well supplied with anecdotes, and they should be useful in teaching the important lesson of playing fair, an aspect of ethical instruction to which the author repeatedly refers. The scientific similes employed sometimes lack accuracy, and the quotations in verse might often be better; but the book should prove of assistance to the teacher who is called upon to occupy the school pulpit.

A School's Life. Addresses by the Rev. Cecil Grant. 141 pp. (Marshall Brothers.)—These addresses by the Headmaster of Keswick School, who, as readers of this magazine will know, is a believer in co-education, are earnest efforts to lead boys and girls to live the higher life. Though the wisdom of making the little volume serve the purpose of a plea for the provision of buildings specially set apart for prayer and praise in unsectarian schools will be doubted by many readers, there can be no difference of opinion as to the duty of schoolmasters and schoolmistresses to place before their pupils the highest ideals of duty, such as are contained in Mr. Grant's addresses. The sermons may be especially recommended to headmasters.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The need of Co-operation between Humanists and Realists.

IN the December number of this magazine Mr. Page refers with approval to the new scheme recently put forward by the University of London by which it hopes to encourage study in the Humanities. But an obvious purpose of the article is to tilt more or less at the encouragement now given to science as well as to reprove those misguided persons who, like myself, regard with favour Carlyle's description of man as a tool-using animal and who would bear this in mind in planning a scheme of education: to take exception to this phrase and yet to claim that there is truth, after all, even in Hamlet's mad description of him as "infinite in faculty," however, is scarcely unimpeachable logic—as one infinite in faculty may well desire to use his hands, even at the risk of being lured into the lower levels of life, the fate Mr. Page pictured at the British Association in September last for boys who should be led to handle tools deftly.

Many of us are both amused by Mr. Page as a caustic writer and esteem him on account of the self-sacrificing devotion with which he has striven on behalf of his colleagues—the assistant-masters: but, outside his own special subject, we cannot treat him seriously as an exponent of all that is desirable in education. Yet he is interesting as a type of a large class who at present bar the path of educational progress—from no sinister motive but from sheer lack of understanding and sense of proportion. He talks glibly of science but obviously knows nothing of scientific method; and he is most illogical. If he had ever carried out the slightest experimental inquiry, he would be aware that the purpose underlying the modern teaching of scientific method in schools is to give training in the fundamental principles of evidence and reasoning—the subject which is to be taught only in the fourth year of the new London course of study in the Humanities of which he speaks with such enthusiasm. We poor tool-using creatures, wandering along the lower levels of life, may, in fact, claim to be in advance of the "inhumanists'" school which Mr. Page represents, as we begin our work in the nursery. Verily there is blindness in the land. If the teaching of the fundamental principles of evidence and reasoning belong to the Humanities, then is "science" one of the most humanistic of studies!

Mr. Page is forced to admit that "science" is now an essential, perhaps the most essential, part of education; and yet he complains that it is pursued too exclusively. Where? it may be asked. Until proof of its accuracy be given, it is unnecessary to consider such an assertion seriously. The Humanities, he tells us, have been continually receiving less attention. But why has this been the case? Is it not because those who have been engaged in the work have in most cases taught so badly—so uninvitingly—that the value of such studies has in no way been apparent? And are not their exponents being now stirred into activity by the rivalry of science, as well as learning something from its methods?

That Mr. Page would himself do well to study the principles of evidence and reasoning is clear. Thus he writes:—

> "'That man should not live by bread alone' is a law not only of revelation but of Nature, but of late years education has been largely directed towards that training which only fits men to supply their material needs. Such training is necessary, but it is not enough. It leaves the higher side of human nature wholly neglected, and unless supplemented by other studies must be counted imperfect and even ignoble."

I make no pretence to knowledge of laws of revelation; but it seems to me to be a law of Nature that we cannot live without bread. How, then, can training which fits men to supply their material wants be ignoble?

Mr. Page tilts at an imaginary foe. Who can possibly wish to neglect the higher side of human nature? What we ask is that those who undertake to train what they are pleased to call the higher side of man will do their work efficiently and no longer pursue the selfish, inhuman course of divorcing him from real and intelligent communion with Nature. Our ideal is embodied in Matthew Arnold's words:—

> "The ideal of a general liberal training is to carry us to a knowledge of ourselves and the world . . . The circle of knowledge comprehends both (the study of the Humanities and the study of Nature), and we should all have some notion, at any rate, of the whole circle of knowledge. The rejection of the Humanities by the realists, the rejection of the study of Nature by the humanists, are alike both ignorant."

Do not, then, let us dispute any longer; but let us admit that we have all been fumbling in the dark and agree, without further delay, to co-operate in devising an effective course of training: there is really no great difference of opinion among us; if the will were there, the way could be easily found. In the first place, we must settle what are necessary subjects, throughout the course, in all schools; then we must insist on these being taught thoroughly.

At Southport, Mr. Page himself told us that there are three necessary divisions of intellectual study and three only; (1) Literature; (2) Mathematics; (3) Science. A sufficiently important admission coming from so "inhuman" a quarter. As mathematics is an exact study, it may be ranked with science: we thus reduce the divisions to two; but it is necessary to add manual and physical training exercises. If training were given effectively during the earlier years of school life in the mother tongue and in the elements of scientific method, due attention being also paid to manual and physical development, a really sound foundation might be laid on which it would be easy to build in subsequent years. In learning the mother tongue, anthropology, geography, grammar and history should be mastered incidentally and in no way taught as specific subjects.

The teaching of mathematics should be, as far as possible, incidental to the experimental work, so that it might always be obvious that the subject is in reality a useful one—an ignoble one, if Mr. Page will. The manual training should involve the cultivation of the use of the fingers in all sorts of ways according to individual aptitudes. The physical training might include music.

Let us all work together to such an end: to dispute while the enemy is marching up to our gates in overwhelming force is criminal folly. It will do us no harm to put on the gloves occasionally, but let it be without malice, for exercise, as a means of securing really effective co-operation when we return to work.

After my recent visit to American schools, I am more persuaded than ever of the absolute importance of "manual" work--using this term in the broadest possible sense. And I would say that the only possible basis on which a treaty can be negotiated with Mr. Page and his friends is that they be allowed at most half the school time for their bookish work in order that the manual work may receive sufficient attention.

HENRY E. ARMSTRONG.

An Attempt to Co-ordinate Educational Effort.

IT is almost certain that considerable changes in secondary education are imminent, and the comparative success or failure of such changes seems likely to depend largely on the answer which will be given to a very simple question. Are those who have special experience or knowledge of the subject prepared to submit to the new administrative authorities wise, weighty, and well-considered advice? If they are, there is great hope of real progress. If they are not, then the authorities, lacking such necessary guidance, must fall into error and wander aimlessly along wrong paths.

But to give good advice, and, above all, in order that such advice may be harmonious and systematic, there must be much preliminary discussion among experienced men of all sorts. Doubtless such discussions are being already carried on with much advantage, both in the educational press and in the meetings of many associations. But this is not enough. As every business man knows, whenever questions of difficulty and importance, involving the reconcilement of many conflicting views, have to be settled, the best method of arriving at a wise settlement is for those who are most concerned to meet and "talk matters over" in a perfectly free and friendly manner. Formal meetings may be required later, but such informal preliminary meetings are usually indispensable to success.

It is on such general grounds—which I only refer to most briefly because they are patent to everyone—that the Association of Assistant Masters has resolved to venture on a very modest, very simple, but, it is hoped, very useful experiment. It is proposed to hold meetings of a social and strictly informal character on the evening of the third Thursday in every month, beginning in January, for the consideration of questions of general educational interest. For this purpose a room has been secured in London, and the Association will endeavour from time to time to secure the presence and help of those who have a special claim to speak with weight about education, but it is desired also to attract others who may be interested in the subject, and it is for this object that I venture to ask for this publicity to the proposed scheme. Any further information will be readily supplied on application to the Secretary of the Association, 27, Great James Street, W.C.

T. E. PAGE,
President of the I.A.A.M.

December, 1903.
Charterhouse, Godalming.

"The Life of the State."

WILL you allow me, in the interests of possible truth, to break through my rule, now eleven years old, of taking no public notice of reviews on books I may write. I concede your reviewer the wrong date on p. 74: it was a careless mistake: the date on p. 85 was, as is indeed palpable enough, a printer's transposition, which I left uncorrected. The last three points are, perhaps, matters more of a point of view than of fact which can be settled in eight lines. But I do not concede his view of the Chair of Peter, based on his statement about the Council o. Nicœa. I might argue that bodily presence is not essential to the influence of a potentate whose claim lies, or should lie, principally in the spiritual sphere; but I will rely rather on the evidence of Dr. Hefele, Bishop of Rottenburg, sometime Professor of Theology at the University of Tübingen. On p. 269 of the English edition, he writes: "It is impossible to determine whether the Emperor Constantine acted only in his own name or in concert with the Pope in assembling the bishops" (*i.e.*, at the Council of Nicœa). "Eusebius and the most ancient documents speak only of the Emperor's part in the Council, without, however, a positive denial of the participation of the Pope. The Sixth Œcumenical Synod, which took place in 680, says, on the contrary: "Arius arose as an adversary to the doctrine of the Trinity, and Constantine and Sylvester immediately assembled the great Synod at Nicœa. The *Pontifical* of Damasus affirms the same act." There is further discussion of these two pieces of evidence on p. 9; and on p. 269 Dr. Hefele, speaking of the Emperor, writes, "If he consulted several bishops upon the measure which he had in view, he certainly would have taken the advice of the first of them." I may add that the purpose of the book is not affected by this or that fact, or view of it.

There are three, I think, rather bad misprints in the book, noted for correction in a future edition. No reviewer has hit on them.

May I say, in conclusion, that I feel my brother had a beam in his eye when he took the mote from mine. I base the feeling on the astounding words, "Aristotle, Plato, Marcus Aurelius, and other non-British heathens." Can criticism further go?

THE AUTHOR.

IT is a rather curious commentary on a book, the "ostensible business" of which is a discussion of the British constitution, that its author and its reviewer should become involved in a controversy concerning the papal power in the fourth century of the Christian era!

The passage in the book to which I took exception runs: "When Constantine the Great in 306 A.D. established Christi-

anity as the religion of the Empire, the Throne of Cæsar and the Chair of Peter ruled the world." Can the concentration of error further go? First, the date is wrong. This the author admits. Secondly, the statement that Christianity became *the* religion of the empire in Constantine's time is wrong. It was not till Gratian's day, half a century later, that its rivals were proscribed. Hence, thirdly, the assertion that the Chair of Peter "ruled the world" is a serious exaggeration. It did not rule the Roman Empire even; and the Roman Empire was but a fraction of the world. Fourthly, and finally, to employ the term "the Chair of Peter" as synonymous with either the Church, or the governing power in the Church, of the fourth century, is to perpetrate a violent anachronism. The papacy rose to its dominant position in the fifth and the succeeding centuries, mainly owing to the extinction of the Western Roman Empire. I did not "base" my statement of this well-known fact upon the absence of the Bishop of Rome (not at that date called distinctively "The Pope") from the Council of Nicœa. I mentioned that significant circumstance merely as a concise illustration of it. The quotations from Dr. Hefele prove nothing to the contrary. Even if we admit that Bishop Sylvester *was* associated with Constantine in calling the Council, does that warrant us in asserting that he or his chair "ruled the world?" But I know of no contemporary evidence that he exerted any conspicuous influence whatever. The whole credit of the assembling of the Council rests with Constantine. He himself claimed it when he said, "God it was on whose suggestion I acted in summoning the bishops," and the Council admitted the claim when it declared that "it was by the grace of God and the piety of the Emperor that the great and holy synod came together."

I note, in conclusion, that the author objects to my descriptive epithet "Non-British heathens," as applied to Aristotle, Plato, and Marcus Aurelius. She does not explain the nature of her objection. Is it as British subjects or as Christian believers that she wishes to claim these distinguished men?

YOUR REVIEWER.

The Effective Teaching of Geography.

MY own experience of the value of the lantern in teaching Geography is the reverse of that of several well-known writers on the subject, and this leads me to the conclusion that this method of instruction has not yet been thoroughly tested.

When properly used, the lantern is a most effective instrument, and I cannot but believe that, if teachers of geography in general were aware how easily a room can be equipped for lantern demonstration, its use would become far more general in the class-room.

For an ordinary class-room, a suitable lantern can be purchased for 30s., the price of a single wall-map. In my own case, I use an ordinary incandescent burner and mantle, which are introduced through a hole cut in the bottom of the lantern. A tap attached to the gas-pipe in the lantern regulates the supply of gas and increases the illuminating power of the mantle. Cylinders of oxygen and hydrogen are cumbersome and expensive, the electric-light is noisy and troublesome, while oil is, of course, out of the question, so that I have had to introduce coal-gas, which I have found quite sufficient for class-room purposes.

In using the optical lantern, I think a frequent mistake is made in completely darkening the room, so that the use of the atlas becomes difficult and writing notes an impossibility. This is quite unnecessary, and leads to difficulty in maintaining discipline. I find a 4 ft. picture quite large enough, and this can be obtained without completely excluding the light and without dispensing with the atlas and note-book—a most important consideration.

If used in this way, I see no reason why the lantern should cause the geography lesson to degenerate into an amusement and nothing more.

Surely the fault lies not in the system, but in allowing the lesson to degenerate into a general talk.

The effective teaching of geography necessitates the use of a *series* of maps, illustrating such points as the distribution of rainfall, temperature and pressure, the density of population, &c.; and I maintain, in this respect, that lantern slides are even superior to the best wall-maps yet published.

Again, in many small schools, modern wall-maps are an expensive luxury, and are conspicuous by their absence, and it is to this class of school that I would strongly recommend the use of the lantern.

The excellent series of slides lent by the Australian and Tasmanian Agents-General will, in the course of two or three lessons, give the pupils more accurate ideas of the geography of these colonies than many hours of talk even of the "graphic" order.

County School, Milford Haven. F. L. LOWTHER.

MISS THORN'S letter, published in your last issue, does not quite agree with my convictions or experience. It seems to suggest a number of measures without any fixed system. Personally, I never found any satisfaction in geography for myself or my classes until I had a system, and the one which seemed most practical was to base the geography teaching on physical lines and to draw on the immediate neighbourhood for illustration.

A few general preliminary lessons were necessary, with maps and a long stick—as a pointer—so that my pupils should have a general idea of the world, the oceans, the continents, the British Isles. The globe-map published by the Canadian Pacific Railway was particularly useful as an intermediate between globes and maps, a point which confuses pupils often. It consists of a kind of picture of the globe, with the background a rich blue, and a star or two shining; the world is painted in bright colours, and the map part is fairly correct; the point of view is diagonally above the N. Pole, so as to show the "girdle round the earth" set by the C.P.R.

To resume: having got over so much ground, I appealed to the country. I displayed ordnance and cycle maps of the neighbourhood, the latter roughly touched up with crayon to show the depressions and elevations, and I pointed out the lie of the land when I was out walking with my boys. Conditions were on my side, I admit. I was in a singularly useful county. The boys were not old enough to shun "shop," and it interested both of us. Then I made them draw maps of the locality, first that part they knew personally, then a wider range. Watersheds—the word ceased to be repulsive when you could stand on one and watch it work. The wearing power of water was evident in the scoops of the downs, the bluffs which descended to the streams. We lived on an alluvial deposit. A general-knowledge lesson showed how the chalk came there. The political side of geography slipped into its place when one could stand on Old Sarum and point to New, show why Salisbury was more important a centre than Wilton, which, however, had given its name to the shire. From that famous mound also one could see the Roman roads run, arching the downs, to Winton and the sea.

Such were the lines I followed. Data—a small class and a liberal chief. The ordinary demands of what is supposed to be geographical teaching were partly fulfilled by a map a week, done in "preparation" under my direction, followed by a lesson on the country or whatever it might be, with a minimum of information required from the text-book. A cycle ride from the school to the midlands gave the material for a general knowledge lesson with the sounding title "Across Two Watersheds." I mention that as a type of the subject I looked out for. With

regard to lantern slides, the scope of suitable sets is usually limited. Norwegian Fiords, a tour in Fez, are too much the style in vogue.

In conclusion, one may say, I suppose, that if ever a school is opened for the teaching of geography, it will be worked on the lines indicated in Sir A. Geikie's book on the Teaching of Geography.

La Villa Ouchy, Lausanne. W. M. CONACHER.

A Difficulty in English Analysis.

CAN you find room for the following? Perhaps some Old English scholar may be able to offer a correct explanation if the difficulty is ventilated in your columns.

"*There* is a heaven above us."

Is it not a mistake to suppose, with most English Grammars, that "there" in such a construction as above has a force similar to that of the adverb "there," and that such sentences originally ran: "A heaven is there (= in that place) above us?"

The following considerations, if they will stand the test, seem to me enough to prove that "there" should be considered as the equivalent of "preparatory it," and parsed as the pronominal subject (usually to an impersonal verb). The origin of "there" is of course pronominal, and the fact that it was at first a dative case need cause no particular difficulty.

O.E. impersonals had no pronoun subject: "Me gœmette" = It dreamed me, I dreamed.

In M.E. "it" appeared: "It is na tung ma tell" = There is no tongue may tell.

But even in O.E. "ðær" had often been used for "it" (hit), particularly after prepositions: "ðæron" = on hit.

By extension "ðær" was used for "it" with impersonal verbs as the grammatical subject; hence we may argue that "there" in the example is equivalent to "preparatory it."

Compare O.F. "a home" = Il y a un homme. "Y" was added in the XVIth century, but it had no locative force. "Naguère" still preserves the old "n'a guère" = There is but little, but lately. The impersonal subject "il" was used early, but it is still omitted in, "Tant y a que," at all events. A comparison of these two constructions shows that "y" and "il" had the same value originally in French.

Compare also the Italian: "Non c'è" (or v'è), "pericolo," there is no danger. Where *ci* and *vi* = there.

Possibly Dano-Norwegian affords the clearest proof of the fact that our "there" is merely a form used for "it."

In D.N. "det" is "it," and "der" is "there"; but both words are used to a large extent indiscriminately as subjects with impersonal verbs or expressions:

"Det er varmt" = it is hot. "Der staar skrevet" = it is written.

"Det fortaltes" = it was rumoured. "Der fortæller" = it is rumoured.

"Det kommer mere Regn" = there is more rain coming.

"Der er dem som troer" = there are they who believe.

"Det er mine Børn" = they are my children.

"Der er ti Miil" = it is ten miles.—I submit the above suggestion with all humility.

Hull. G. H. CLARKE.

Berthon's French Grammar.

I WISH to point out that Prof. Berthon's French Grammar, reviewed in your last issue, is not, as his preface and your review imply, the first French Grammar written in French for English schools, as my own "Grammaire Française Elémentaire" was published by Messrs. A. and C. Black in 1901, and went into a second edition in 1902.

University College, London. W. G. HARTOG.

MUTUAL AID.

THE object of this column is to afford teachers the o nity of asking questions of and giving assistance to coll The questions received to which replies are solicited printed first; following these will be the answers whic been sent in, and to make such replies intelligible to all r they will be accompanied by the question.

The questions should deal only with educational r using the expression in a broad sense, and the publica otherwise of any question must be left entirely to the di of the Editors.

Questions and answers should be addressed to the Ec THE SCHOOL WORLD, St. Martin's Street, London, W. should be accompanied by the full name and address sender, though not necessarily for publication. Each c or answer should be on one side only of a separate paper.

QUESTIONS.

H. MANSFIELD. In what book can I find an acc contours and contour drawing, such, for example, as is r in the physical geography papers of the Cambridge Examinations?

GEO. CARTER. What books are available on Gr Arithmetic?

E. T. THURSTON. I want to acquaint myself with t tributions Pestalozzi made to the science and art of edu Are English translations published?

R. F. GRANTHAM. Are British teachers in trai acting teachers received in any good German schools for experience? Where can I obtain information?

P. L. HENDERSON. Can any teacher of English where I can find out what has been done in the way of t composition orally and by the use of pictures?

B. W. Can any reader of THE SCHOOL WORLD which is the best guide to the Civil Service, giving syllal the examinations, the number of vacancies yearly, and w look for notice of them?

E. THESIGER. What modern system of lighting is be small country school where there is no gas supply? Wh I likely to find an account of the experience of others?

QUESTIONS WITH ANSWERS.

M. J. *Who publishes "Guide to the best Historical F mentioned in "The School World" of April, 1902? As is its price?*

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In addition to this difference of images, the eyes turn more toward the nose in looking at near than at remote objects. The effort to look at a finger three inches from the nose will produce a feeling of strain in the eyes due to the effort to turn them together to look at the near object. This muscular tension will decrease as the finger is moved farther away.

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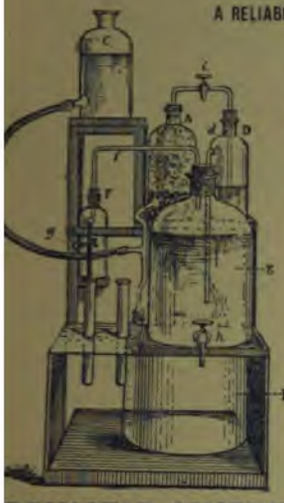

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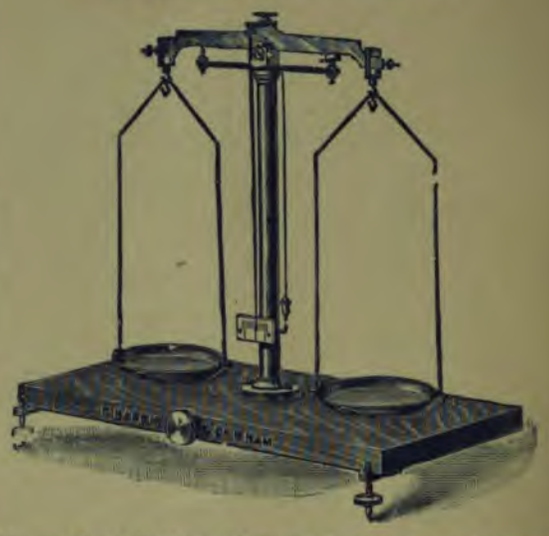

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To face first matter

The School World

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THE CONTENT AND METHODS OF SCHOOL CLASSICS.

By S. E. WINBOLT, M.A.
Christ's Hospital.

COMPARATIVELY few of the classical masters of schools in this country attended the inaugural meeting of the Classical Association of England and Wales, or signified their intention of becoming members; and one naturally wonders how many are really alive to the issues involved in the controversy in *The Times* and elsewhere which arose out of the meeting at University College. Are there some of them who are not content to find their craft "everywhere spoken against," the journal—the *Classical Review*—which should represent the activities of a living profession appearing but irregularly, and the teachers of classics in many of our endowed schools being paid salaries which an elementary-school teacher would firmly refuse? We devoutly trust there are, and that they are more numerous than we are inclined to suppose, and that in the cause of English national education they will become strenuous supporters of the new Association, and by every means in their power endeavour to strengthen the position of classical studies in our schools, at our Universities, and in the minds of the parents of to-day and of to-morrow.

For there is no hiding the fact that the upshot of the first meeting of the Classical Association was the profound conviction that there must be a stout fight for the defence of the classics against attacks threatening on all sides. There was no doubt that classical teachers and students must very soon set their house in order, it was practically agreed that a scientific spirit must be brought to bear on lessons in the classical class-room as well as in the science laboratory, and that the practice of classical teaching stands to-day in decided need of improvement, and in future must not be allowed to fall so far in arrear. In short, two clear points were made: first, the proper place of classics in the national system of education needs to be maintained, and second, that methods must be improved.

Now, we are not of those who expect that our crusade will be fought for us by the *vis inertiae*, and we doubt if mere theoretical argument will ever convince the champions of that startling contradiction in terms, a *useful education*, or their twin-brothers, those upholders of modern subjects who, if they had their way, would entirely replace classics by modern languages and other modern subjects. We must be up and doing, and content to rely not on long tradition and prescription, but on the merits of the men we train. "By their fruits ye shall know them." With what confidence, then, are we to advance our banner? We may firmly believe and assert that the experience of the last two generations, as well as of the preceding three centuries, is that classics affords the soundest possible basis and foundation for the educational superstructure which does not cease to rise and to solidify when a boy leaves school or university, but continues to rise and solidify as long as he lives. For a sound classical training is a guarantee that a mind has been trained to deal with ideas, to apprehend them, to prove them, and to assimilate them. Such a mind has been taught to make distinctions, to analyse and synthesise, by means of its earliest gymnastic, namely, the logical training of Greek and Latin grammar. Advancing from this it has realised to a considerable extent the life and history of the Greeks and Romans, largely by means of comparison and contrast of modern life and history. From this realisation has been generated a living interest in classical literature. This has partly come about through translation and composition, both of these exercises involving many processes and producing "alertness and flexibility of mind." He who is content to read translations of the classics, as Prof. Postgate urged, not only has not attained these qualities, but has not seen the beauty of the literature. His palate has tasted the flavour not of salmon, but of "tinned salmon."

You cannot, in short, get the value of the classics except at first hand. It is supremely important that the growing mind should gradually become familiar with and assimilate the highest models of literature of all kinds, and it is equally certain that the highest and most perfect models of literature are only to be found in ancient Greek and Latin literature. The more young minds of to-day can be brought to realise what Prof. Postgate called the "calm, order, harmony, and self-restraint of Greek literature," the less shall we be subject to the "tawdriness, feverishness and

frivolity" of modern writers. To be brief, the highest mental qualities are developed by study and assimilation of the life, history, art, and literature of the ancient Graeco-Roman world. This is a definite position, and the friends of classical training cannot afford to recede one inch from this conviction.

But under modern conditions this conviction certainly cannot justify the keenest classic in claiming a monopoly of the school time-table for his subjects. Mathematics, science, modern languages, undoubtedly are entitled to a large proportion of the young pupil's time. We cannot justify a classical monopoly: it is imperative on us to admit the new. What, then, must be retained in the old classical system? What are the best elements in the classical training? On what points must the strongest emphasis fall? I believe that in a modern classical fourth form the ratio of hours spent on classics to those spent on the other subjects combined is that of about nine or ten to fourteen or thirteen. This, of course, is a great reduction on the classical *horarium* of two centuries ago, and yet classical methods in some cases have altered but very little since the days when Latin and Greek held the field practically unchallenged. And it is to be expected that even in classical forms another hour at least will soon go by the board, and eight or nine will be our allowance. What, then, shall the classical teacher do? Now, in the first place, it is fairly obvious that the public-school master is not free to make a *jactura* of whatsoever he may think fit.

The question of what concessions can best be made to the modern spirit really begins with the universities, who control examinations and scholarships. In the present constitution of things the schools must follow where the examination syllabus leads. Shall Greek or Latin, both or one, be optional for students of science and modern languages? I have before in this magazine, in dealing with the London Matriculation regulations,[1] advanced reasons for the retention in all cases of Latin, and a free choice as between Greek and an alternative. As far as the universities, then, are concerned, let it suffice here to reaffirm our conviction on the subject of Latin. But to come to the schools. And before we proceed to say what we think desirable as to the content and methods of school classics, let us for a moment examine the charges which are implicitly brought against classical teachers. In the first place, we are inclined to think that much that has been said by way of suggesting supposed improvements in classical teaching has been said by those who do not really understand what goes on in class-rooms. For instance, one would almost gather from some such criticisms that modern are not given a place alongside of classical subjects. And yet this is universally the case. Many who urge the strengthening and improving of methods too readily assume—possibly from recollections of class-rooms of twenty-five or thirty-five years ago —that the classics are still being taught in a very narrow and conventional spirit indeed. We demur to these wholesale charges. We would state emphatically that with an average teacher—let alone an enthusiast—the tendency is, for the sake of his own peace of mind and his interest in his form work, to humanise his lessons to a very large degree. To us it appears an anachronism calculated to raise a smile solemnly to advise teachers to try to throw "light on the matter" of ancient authors. The majority of men, we believe we are right in claiming, *do* already regard Greek and Latin lessons not only as good mental gymnastics but also as a valuable instrument of culture. In schools of any calibre at all this spirit will certainly be found in the man who sits at the desk or walks round among the pupils of his composition class. We will not deny that there may be cases, in small and badly-endowed schools, of classics being made a dull subject and helping to inculcate "disinterested hatred of all knowledge." But this is quite another story. Some teachers have no their hearts in the work because they are not good men; others are good men spoiled because the sordid and hopeless conditions of their professional life give them not the ghost of a chance of retaining enthusiasm. Underpaid and overworked, these latter bring the despair of their lives into their impossible tasks in the class-room.

Then, again, many adverse critics of modern classics are evidently suffering from that sad modern disease of inability to envisage their subject, of looking all *around* the business in hand but seldom *at* it. Of these we take to be all such as advise us to sacrifice the kernel for the shell, and ask us to centre attention on the prettinesses and "interesting" aids to our work while we shirk the real business of severe mental effort. Archaeology, and the embellishments of modern text-books which it has produced, seem to us to be rightly characterised by Mr. Page as the accessories of classical learning, not its essentials. These things have their use, but it would be a great mistake to regard them as paramount. When Mr. Page writes, "it is to the study of the actual text of great authors that all efforts must be directed," he has our entire concurrence. In face of a diminution in the time allowed for classics, what folly to call schoolboys away from their texts to the study of philology, textual criticism, and archaeology! As we have said, these are excellent departments of study, and by all means let specialists give themselves to discovery in these branches, and hand over to us their results for use when we need them for stimulus. These are certainly not the days for expanding our sphere, but for contracting it, and for better organisation within its narrower limits. Minute points of comparative philology or recent excavation are not for our fifth and sixth forms, or even for undergraduates. Classical teachers must be content to glance through the summaries of specialists and extract therefrom striking matter to illustrate the *thoughts* of the classical author who is being studied in class. And this is certainly our main concern

[1] The School World, November, 1902.

with our Latin and Greek authors, the genesis of thoughts and their precise expression in language. Mr. Page deserves thanks for recalling us to the main points of attack, which it is so easy to lose sight of when our light-armed skirmishers are all over the plain in front of us.

Their weapons of lantern-slides, illustrations of coins, and travelling holidays for schoolmasters, are only, after all, to be used in the prelude: the real work will be done with the infantry sword of a plain text and plenty of thought. Schoolmasters must not be led away by enthusiastic publishers who, seeking for some means of bringing freshness into their schoolbooks, have gladly and naturally availed themselves of the resources of museums and photographic apparatus. The publishers, too, have naturally listened to the siren voices of a school of educationists whose watchword is "interest." And this seems to be the root of the matter. What will "interest" a boy is too often taken for educative; and, if it were not so serious a matter, it would provoke laughter to witness many of the educational farces which are being played at the feast of this new goddess, Interest. What strange shifts are being resorted to by good people to save boys the necessity of mental effort! It is as though in the mental gymnasium we hoped to strengthen muscles by setting boys in swings, or by giving them the pleasurable sensations of a switch-back railway, and banished the sterner efforts of pressing at the parallels and pulling-up at the horizontal bar. One feels tempted to erect opposite to the temple of Interest a more imposing fane to Effort, on the face of which should be inscribed in bold characters the half-forgotten legend:

PATER IPSE COLENDI
HAUD FACILEM ESSE VIAM VOLUIT.

Beauty of style and greatness of thought are not to be apprehended by those who seek delights and shun laborious days: *Curis acuit mortalia corda.*

Still, even within the limits we have sketched out, there is obviously room for the invention and wider diffusion of better methods. We do not suppose for a moment that the final word has been said as to how Latin prose composition may be taught in its various stages. In Latin verse several ways of tackling elegiacs are more or less common property, but hexameters are left strangely alone. The Classical Association will have plenty to do if it sets itself to stimulate discussion on such points and to make known to teachers the results of discussion. But to return to the schools. If our object is insistence on the thought of our authors and the promotion of literary culture, what must be retained of the traditional system? For junior forms, of course, grammar, but as far as possible inductively taught, and always point by point thoroughly driven home by translation and composition, as in Cook's excellent "Latin Course" (Macmillan). There can be no question of sacrificing anything of the study of Homer, Sophocles, Thucydides, Plato, and of Livy, Virgil, Horace, and Tacitus, selected and arranged, of course, for middle forms, but straight ahead for the top form. If there is a tendency for teachers in school to spoil this part of classical training by dwelling unduly on the *language*, we must rectify this and recall attention to the thread of the thought. In translation we want two methods side by side; first, that of reading authors intensively, a careful line-by-line and word-by-word study, and second, free and discursive reading which allows a pupil to see a subject whole. We believe there *is* need of reform in this direction. In order that boys' minds may be less fogged with snippets of books, let us use English translations more freely, reading them out to our classes so as to keep the connection between the selections we have chosen for detailed study. If notes are any criterion, in the more purely literary books we want more parallels to ancient thought *from our own literature*: parallels of grammar and language are somewhat excessively dealt with. And while reading these authors by all means let us use illustrated editions, and put into the boys' hands Hill's "Illustrations," Gow's "Companion," or Middleton and Mills, giving suggestions and letting them delve for themselves.

As to composition, we cannot sacrifice our Latin prose, or even our Greek prose: Greek verse may be dispensed with for some, and Latin verse for some thirty or forty per cent. may be dropped after two terms of trial. The study of ancient history and social customs is a necessary part of the classical course. These exercises rightly pursued contain the kernel of classical study: we cannot contemplate sacrificing any of them. Without going minutely into the psychology of the study of each of these subjects—as the Headmaster of Haileybury does with much discernment in "Are we to go on with Latin verses?"—we claim that this course is calculated to develop in a boy logical acumen, accuracy, taste, culture, imagination, intellectual detachment. Imagination and intellectual detachment! these, after all, are the real hall-marks of the educated man, and they are the crowning products not to be enjoyed by those whose early course has been made too smooth for them by so-called heuristic and "interesting" methods. In not a few things Cowper showed himself a sane critic of the public schools of his day. Let us adapt a few of his verses to the present controversy:

> Habits of close attention, thinking heads,
> Become more rare as *education* spreads,
> Till *teachers* hear at length one general cry,
> "Tickle and entertain us, or we die."

Thank you, good master Cowper, for that word!

AT the Liége Exhibition to be held in 1905 an international congress of primary instruction is to be held. The congress is being organised by the Fédération générale des Instituteurs Belges. Full particulars can be obtained on application to M. P. Cnudde, general secretary of the Comité d'Etudes du Congrès, instituteur à Syngem (Belgique).

CHEMICAL LABORATORY BENCHES.

By CHARLES A. KOHN, M.Sc., Ph.D., F.I.C.
Principal of the Sir John Cass Technical Institute.

THE design and arrangement of a chemical laboratory is conditioned by so many factors that no one scheme is likely to be of general applicability. Whether an existing room requires to be adapted or whether it is question of planning a laboratory for a new building, the extent and character of the available space, the number of students to be provided for, the nature of the work to be carried out, and, by no means least, the money that may be expended, must of necessity guide and determine the general plan of the laboratory. The same considerations apply to some extent to the nature and completeness of the fittings that are adopted, but there are many essentials which every chemical laboratory must contain, and of these the working bench merits the first consideration. It is there that the actual teaching is carried out, and it is there that the pupil should acquire his real and direct knowledge of chemical science. The reforms in the teaching of chemistry that have taken place during recent years have considerably changed the nature of the courses of practical instruction that were formerly given to beginners. It is recognised by most teachers that simple exercises both of a qualitative and of a quantitative character bearing on the fundamental principles of the science form a better basis for instruction than the time-honoured drill in qualitative analysis of the last generation, and this beneficial reform is of importance in considering the arrangement of the laboratory working bench.

Simplicity, as much clear working accommodation as possible, and an adequate supply of the fittings that are necessary for and common to every kind of laboratory experiment, constitute the essentials for a good working bench. It is a mistake to occupy the space by such fittings as are only required for a limited number of specific operations such as are worked through during a certain period of the course of instruction, and from this point of view, sinks on the benches, and the stacks of reagent bottles that tradition has handed down as the characteristic of a chemical laboratory can be advantageously dispensed with. Sinks, if in a suitable position, it is true, are very handy for collecting gases, and the preparation of the commoner gases is of course a part of every elementary course of instruction, but they are not worth the permanent occupancy of a sixth of each pupil's bench accommodation, and their replacement for such purposes as the above by earthenware troughs is quite satisfactory and moreover economical. Further, by removing the sinks from the benches a great advantage is gained in respect to the washing up of apparatus. This as conducted on the bench, when sinks are provided, is nearly always an unsatisfactory operation owing to the small size of the sinks and to the position of the taps; it leads to a considerable amount of breakage and, worst of all, to a sloppy bench on account of the inevitable splashings and spurtings that occur. If, on the contrary, good-sized sinks are placed at the ends of the benches, or, when the benches are run up against one side of the laboratory, between successive benches, and they are provided with swan-neck taps sufficiently high from the bottom of the sink to allow of the washing out of larger apparatus (a height of 26 inches from the tap to the bottom of the sink will permit the washing out of a burette in a vertical position), all the above objections are satisfactorily overcome, and the pupils can be taught to wash up their apparatus properly instead of piecemeal, a test-tube or two at a time, as is too often done. With a few words of instruction this method of washing up really saves time; but, of course, the important considerations are that it saves bench space and contributes to greater cleanliness and order on the bench.

In the laboratory shown in Fig. 1, which is that at the Sir John Cass Technical Institute designed two years ago, the sinks are fixed between the benches against the side wall of the laboratory; they are not shown in the photograph. The space between the benches is 5 feet, and this is occupied by a glazed earthenware sink 30 inches long, 12 inches wide, and 12 inches deep, on either side of which is an earthenware waste-box of the same width and depth as the sink, and 12 inches long. A zinc wire basket with handles is provided with each waste-box. This arrangement has proved thoroughly satisfactory; the proximity of the waste-boxes to the sink is to be especially recommended, as it gives no excuse for filter papers or other solid material being thrown into the sink.

The shelves for reagent bottles that are usually placed above the laboratory bench, to accommodate the two dozen or more reagents required for qualitative analysis, have the great disadvantage that they prevent the teacher from seeing his pupils, whilst by their removal he is able to obtain an uninterrupted view over the whole laboratory. A very useful purpose is therefore served by so restricting the number of reagent bottles that they can be accommodated in one row on each bench, thus avoiding the use of shelves, and all the reagents really required for general use can quite well be got into this space. The other reagents needed can be placed on the side shelves of the laboratory, or if the number of pupils is great and the side-shelf accommodation limited, a tray containing the additional reagents needed for qualitative analysis can be allotted to each bench when this branch of instruction is being given. The chief point to be considered is that it is not worth dispensing with the great advantage of a clear view across the laboratory for the sake of accommodating such additional reagents as may be required for a portion only of the curriculum. An earthenware tray has been brought out by Messrs. Oates and Green, of Halifax, designed by Mr. A. W. Cooksey, for carrying reagent bottles, which fulfils its purpose admirably. I

is provided with a shallow ridge both back and front, and a dividing ridge in the centre, so that it can be used for back-to-back benches as shown in Fig. 1; a similar single tray is made by the same firm. Since the trays are made in sections and are easily removed, ready access is given to the gas and water pipes which are conveniently arranged along the centre of the bench, and above which the trays are placed. The choice of the reagents accommodated will vary in different laboratories. As the result of experience the following have been found satisfactory in the size of bottle specified:—concentrated hydrochloric, nitric and sulphuric acids, each 175 c.c.; the same acids dilute, each 250 c.c., and the following

FIG. 1.—The Chemical Laboratory at the Sir John Cass Technical Institute.

in 175 c.c. bottles:— ammonium hydrate, sodium hydrate, sodium carbonate, barium chloride, silver nitrate, and test papers.

With the removal of the sinks and of the tiers of reagent bottles from the bench, a maximum of clear working space, which can be seen from every part of the laboratory, is obtained.

The bench itself is best made, as is customary, of pitch pine with a teak top, and a length of 3 ft. to 3 ft. 6 in. can advantageously be assigned to each worker. The width of the bench should be not less than 2 ft. A suitable arrangement of cupboards and drawers is shown in Fig. 1; the cupboards are provided with a shelf limited to half the depth of the cupboard, and the drawers with divisions. A double set of cupboards and drawers are arranged for each working bench, as shown, to permit of two pupils working at the same bench at different times. It is of distinct importance that each worker should have his own set of apparatus, and be entirely responsible for its care, apart from special apparatus loaned by the teacher.

The essential bench fittings that remain for consideration are the supplies of gas and of water. A liberal supply of both is most desirable. Each bench should be provided with two gas-nozzles, and the taps should be placed at the front of the benches rather than at the nozzles, which are, of course, at the back of the bench in front of the reagent bottle-tray. This plan is certainly more expensive than that of restricting the gas-piping to the central channel between the back-to-back benches, but the difference in cost is not very great, and no teacher need be reminded of the great advantage of the worker being able to regulate his burners without having to reach over the apparatus he is working with.

The question of the water supply on the benches assumes a special aspect when no sinks are provided there. It is then required for experimental work only, and the extent to which it is provided must be decided by the cost that can be incurred. Its total omission reduces the expense of the bench to a minimum, and the pupils are certainly no worse off than with the older form of bench, provided a sufficiency of side sinks are supplied. But a consideration of the many experiments that can be advantageously included in a course of practical instruction in elementary chemistry will indicate the advantages that accrue from having a water supply and waste on each bench. For such

operations, for instance, as the distillation of water, the determination of its boiling point, the condensation of water in its preparation by the burning of hydrogen, the condensation of nitric acid in its preparation from nitre, a water supply for use with a condenser or otherwise is essential. Again, for the separation of solids, as in the preparation of salts and other compounds where it is important to have regard to the reaction from a quantitative point of view, accessibility to a tap to which an ordinary glass filter-pump can be attached for filtration is most useful, and there are many other experiments included in a two or three years' course of practical instruction in which the use of a pump is advantageous. To supply these needs efficiently a tap and waste should be allotted to each bench; if rectangular and swan-neck taps are alternated at successive benches, it will be found convenient, as the former will serve to supply condensers and the latter for the attachment of filter pumps. Their position on the bench is shown in Fig. 1. In this case two taps are fixed on each bench, but the laboratory is designed for more advanced and special work than that of a secondary school.

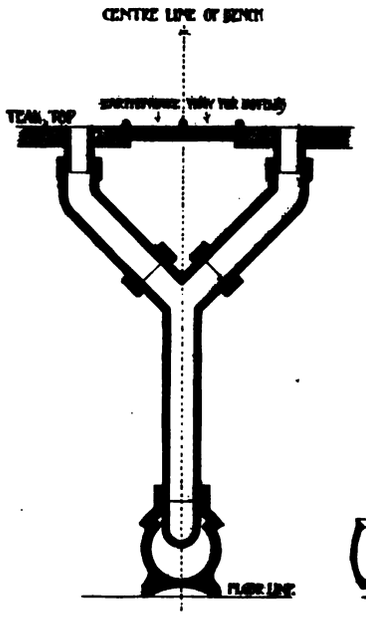

FIG. 2.

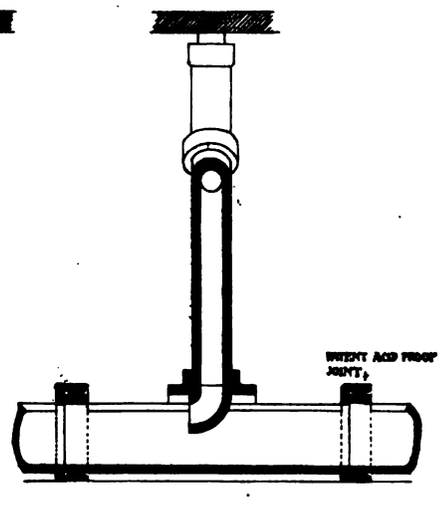
FIG. 3.

The arrangement of the wastes and their attachment to the drain for the bench are shown in Figs. 2 and 3. The reproductions are one-tenth of the actual size. This form of fitting is made by Messrs. Oates and Green from the design of Mr. A. W. Cooksey; the whole is constructed of glazed earthenware. The bench waste consists of a detachable earthenware tube provided with a flange which is let into the bench top; this connects with the bridge pipe, and the latter with a vertical pipe leading to the bench drain. The drain is open at the top, so that it is readily accessible and easily cleaned. Fig. 2 shows this arrangement in vertical section as adapted to back-to-back benches with the tray for reagent bottles above the drain; Fig. 3 is also a vertical section at right angles to the line of Fig. 2. The drains are made in sections which are attached by self-centering acid-proof composition joints.

Suitable junctions are made for connecting these bench drains to similar drains from the sinks or other water exits of the laboratory. The main exit drain from the laboratory should of course be provided with a syphon overflow trap.

Each row of benches should have a main-cock for gas and for water, so that they can be cut off independently of each other, if necessary, for repairs.

The desirability of providing a down draught on the working benches is very much a matter of opinion. Considering the expense involved, and the fact that even under the most favourable conditions they only serve for the minor operations in which acid or other objectionable fumes are evolved, they can hardly be regarded as essential, and if good-sized draught cupboards are provided in other parts of the laboratory, they can quite well be dispensed with. To obtain an efficient draught for them is always a difficult problem; they take up considerable space on the bench when in use, even if so arranged as to be provided with a detachable hood, and if in their absence the atmosphere of the laboratory occasionally becomes temporarily laden with antiseptic fumes no great harm is done; in actual chemical work the laboratory atmosphere is usually pleasantly indicative of the work in progress.

In Fig. 1 a suitable row of draught cupboards is shown at the end of the laboratory. It is very handy to have a good-sized sand-bath and water-bath always going in one of the fume cupboards, so that no time is lost in fitting up a bath for evaporating off small quantities of acid and other fumes.

The position of the benches in the laboratory must be decided essentially by the shape and size of the room, but it should also be considered in relation to the teacher's demonstration table. This table, which, if raised on a platform nine inches high, will give the teacher a complete survey over the whole laboratory, is best placed at right angles to the run of the pupils' benches; this allows all the workers to follow the demonstrations of the teacher without any having to turn

their backs to the benches, and at the same time the teacher gets the best view of his pupils as a whole.

In a small laboratory a great saving of space is effected by running up the rows of benches against one of the laboratory walls, although this has the disadvantage of giving only one passage. This is the plan adopted in the laboratory shown in Fig. 1, which accommodates thirty-five students working at a time. A larger laboratory should have at least two passages or a wide central passage with the benches arranged on either side of it.

THE TEACHING OF ENGLISH IN SCHOOLS.

By J. H. FOWLER, M.A.
Clifton College.

II.—EXAMINATIONS IN ENGLISH.

IN a previous article I urged the claims of our English language and literature to a greater share of time and attention, on the grounds that it is possible to secure through their means a large part of that training in accuracy of thought and expression which has hitherto been given through Latin and Greek, and that only by their means can we hope to secure the continuance of that training in "humanity," that development of the nobler side of life, which is the most valuable part of education. In this article I have been asked to consider the extent of the helps provided for that study by those public examinations which so largely direct the aims and set the standards of our English schools.

It may be well to set down first the precise regulations of the chief examining bodies.

I.—UNIVERSITY OF LONDON MATRICULATION.

The paper will test knowledge and command of English by questions in composition, précis-writing, paraphrase, and analysis of sentences. Some of the questions will involve a knowledge of the most salient facts in English history and general geography. (3 hours allowed for paper.)

II.—OXFORD LOCAL EXAMINATIONS.

A. *Preliminary.* (Age limit for distinction, 14.)

(*a*) *English Grammar* (Accidence). Passages will be set for parsing, paraphrase, and explanation. (1 hour.)

(*b*) *English Composition.* Candidates will be required to reproduce in their own words the substance of a passage read to them. (¾ hour.)

(*c*) *English Author.* Either Lamb's "Tales from Shakespeare" (Pitt Press Selection) or Select Poems of Tennyson, by George and Hadow (i.-xxi.). (1 hour.)

To pass, candidates must satisfy the examiners in two of the three divisions, *a*, *b*, *c*.

B. *Junior.* (Age limit for distinction, 16.)

(*a*) *Grammar.* Passages will be set for parsing, analysis, paraphrase, and explanation. (1 hour.)

(*b*) Scott, "Lord of the Isles."

(*c*) Shakespeare, "Richard II.", *or* "As You Like It."

(*d*) Tennyson, Select Poems, by George and Hadow. (1½ hours.)

(*e*) *Essay.* (¾ hour.)

Candidates must satisfy the examiners in two of the divisions, one of which must be either *b* or *c* or *d*.

C. *Senior.* (Age limit for distinction, 19.)

(*a*) *Grammar.* (1 hour.)

(*b*) Dryden, "Essay on Dramatic Poesy," with Pope's "Essay on Criticism." (1½ hours.)

(*c*) Shakespeare, "Richard II.", *or* "Hamlet."

(*d*) Tennyson, Select Poems, by George and Hadow.

(*e*) Essay. (¾ hour.)

Candidates must satisfy the examiners in two of the divisions, one of which must be *b* or *c* or *d*.

III.—CAMBRIDGE LOCAL EXAMINATIONS.

It is hardly necessary to give the regulations in full, as the difference from the Oxford type is not great.

IV.—OXFORD AND CAMBRIDGE SCHOOLS EXAMINATION BOARD.

A. *Lower Certificates.* (Intended for Candidates 16 years of age.)

(*a*) Grammar.
(*b*) Easy Composition. } (2½ hours.)
(*c*) Dictation.

(*d*) Portions of authors to be specially prepared: in 1904, Shakespeare's "Julius Caesar" and Scott's "Waverley." (2 hours.)

B. *Higher Certificates.* (Intended for Candidates 18 years of age.)

(*a*) Prose Composition. (1½ hours.)

(*b*) Portions of authors to be specially prepared: in 1904, Shakespeare's "Tempest" and "Julius Caesar" (2½ hours), and *either* Bacon, Essays I.-XXXIX., *or* Chaucer, "Prologue," "Knight's Tale," "Nun Priest's Tale," *or* Milton, "Lycidas," "Comus" and "Samson Agonistes" (2 hours). The papers shall contain questions on grammar and etymology.

I am not hopeful that examinations, however well conceived, can do very much to guide the teaching of English on to the right lines. I believe that the improvement which is so urgently needed will have to come mainly from the enthusiasm and devotion of the teachers themselves, assisted, perhaps, by such contributions to right methods as the careful thought of those who are responsible for the training of teachers may devise. For in English we are without the advantage of that long tradition of teaching which helps us in the Classics. Few of us enjoyed much good English teaching in our own school-days. The handbooks and annotated editions provided for us are as often hindrances as helps. We have to think out our own methods. The best methods in this subject are only in process of being found out; and it may well be, therefore, that in this subject more than in most an enlightened professor of the theory and practice of teaching could do something to help us. But from examinations, I think, we can ask little more than that they shall not hinder us. Some of them have done a good deal in the past to make English literature the special prey of the "crammer," and by consequence to make it hateful to those who should have been taught to love

it. This at least examinations need not do; and this we can never forgive them for doing.

With regard to (I.) the English paper of the London Matriculation Examination, it is evident that those who have drawn up the new regulations had come to the conclusion that the best thing they could do was to insist on the essential minimum and nothing more. I have no wish to criticise that conclusion. The examination is an admirable one as far as it goes. *Précis-writing* especially supplies a splendid training in intelligence and in the art of expression. We ought to make more use of it. Schoolmasters who find a difficulty in obtaining suitable exercises might avail themselves sometimes of the newspaper condensations of newly-issued "blue books." The doubly-condensed account usually given in the newspaper summary or leading article is a "fair copy" ready to hand. This particular exercise has the further advantage of stimulating an enlightened interest in current questions. *Paraphrase* is a very bad or a very good exercise according to the nature of the passage chosen and the direction of the teacher. It is absolutely bad if it encourages, as it is too often allowed to encourage, the notion that it is a creditable thing to dress up a thought in more pompous language, or to change words for the mere sake of finding synonyms. But, properly used, it has great value in clearing up the pupil's comprehension of what he reads, and teaching him not to be satisfied with a hazy general impression. Few schoolmasters will regret the disappearance of historical English grammar from this examination, and few lovers of English literature will regret the absence of a play of Shakespeare to be laboriously "crammed." But, of course, it remains true that the examination does nothing whatever for English literature in schools.

As to (II., III.), the English section of the Oxford and Cambridge local examinations, the substitution of "reproduction in their own words of the substance of a passage read aloud to them" for an essay in the case of candidates under fourteen is to be commended. Nothing has contributed so much to the unpopularity of essay-writing with both teachers and pupils as the bad habit, wholly unnecessary, of asking children to write essays on abstract subjects for which their limited experience of life does not furnish them with any material. It is indeed an evil almost inseparable from the tendency in English schools to let examinations direct our methods, that we are tempted to set subjects for essays which may be the best that a general examiner can select, but are certainly not the best available for us in dealing with a particular form. An examiner in most cases is bound to choose a wide subject requiring little previous knowledge and no reference to books. The form-master will do much better, as a rule, to utilise the historical or literary material his form has been amassing during the term, or to train them into using, without abusing, the school library. In the senior division, the authorities of the local examinations might do us a real service by aiming a little higher. To limit the time for an essay to three-quarters of an hour is openly to signify that they expect little. I should like to see one and a-half hours allowed, with a limit of length—say, 750 words—fixed for the essay, so that it might be understood that time was given for thinking over the subject, for logical arrangement and choice of expression.

The Oxford and Cambridge Schools Examination Board (IV.) set a good example in allowing fuller time for English composition. They also expect larger "portions of authors to be specially prepared" than are asked for by either the Oxford or the Cambridge local examinations. This is, I think, a step in the right direction, provided that the papers are so set as to encourage study of the larger questions raised by a book, not an investigation of minute points. I am a little afraid of the provision that the literature papers "shall contain questions on grammar and etymology." We can learn much from studying the history of the uses of a word in our own language, and it is interesting to know, if we can, from what language it originally came; but few kinds of knowledge seem to me more barren than learning, say, the Spanish or the Anglo-Saxon form of a word when we do not know either Spanish or Anglo-Saxon. I am sure that all these examinations in prepared books are apt to have a cramping effect on our reading of English literature in school. One hears of schools where a whole year of English lessons is devoted to one play of Shakespeare. If we consent to get up one book carefully for examination, we ought to see that a number of others are read at a much quicker rate and in a quite different way. But the further consideration of the best methods of studying English must be deferred to another paper.

ART INSTRUCTION IN SCHOOLS.

By Archibald H. Christie.

Inspector of Art Schools and Classes, L.C.C. Technical Education Board.

II.—Methods.

THE proposition that even the most elementary course of drawing should be the means of imparting some knowledge of art work of the highest quality at first sight opens up a field of somewhat embarrassing extent. There is so much work of all kinds that it would be desirable to include in a course of elementary study that any attempt to go over the ground without careful discrimination might result in a diffuseness tending to destroy all the educational advantages aimed at. And if the necessity of properly welding together the technical side of the work—the difficulties of drawing—and the development of the intellectual appreciation of fine art is also taken into account, there is danger of the problem appearing so complicated as to be deemed impracticable in the

limited time usually placed at the disposal of the school art-master.

But in reality the suggestion entails no revolutionary upheaval of methods, but rather the reformation of those already existing by the substitution of a definite aim in place of a vague course of work devoted to all kinds of ill-assorted purposes of no absorbing value in themselves. If the fact that the final aim of all drawing instruction is really to teach art be once clearly grasped, reformation becomes a simple process of the gradual elimination of all exercises not directly to the point, and the substitution of better methods and more instructive material. One real danger must, however, be pointed out, the very existence of which will serve to clear the ground of difficulties by affording reasons for laying aside much that would only encumber the work. The school course of study will always be limited by the fact that it rests upon a strictly "pictorial" practice. The examples set before the pupils must always represent things of great interest and real beauty, illustrating either the artistic progress of various branches of work, or bringing portraits of persons, places, and objects of national or local historical, or even sentimental, importance to their knowledge. The examples should be moreover of carefully gradated difficulty and have a certain direct connection with each other. But it must never be forgotten that all examples are to be used either as drawing copies, or to introduce exercises in those kinds of designing that can be worked out to their highest perfection on paper with the brush, pen and pencil. It would be quite proper to include such a subject as the general history of patterns for the decoration of flat surfaces, and to illustrate the lessons by examples of the typical pattern work of masters of all periods, countries and crafts; but to enter into any discussion of the methods of manufacturing woven fabrics, wall papers, inlays and so on, which govern those who design expressly for these processes, would be distinctly outside the scope of school classes. For this reason such an exercise as stencil designing, frequently admitted, is certainly out of place.

Knowledge of the technical restrictions of a single limited decorative process will warp the pupil's general notions of design. Design for definite crafts can only be safely studied in a workshop where knowledge of tools and materials is to be obtained. The school woodwork and needlework classes are upon a different footing from craft work attached to an art class; they are admitted for the purpose of cultivating handwork, and, if properly conducted, are prevented from exerting a narrowing influence upon the general work by their utilitarian character. In a school art-class the practical work is restricted to drawing; but the intention of drawing should be to present to the pupils a general idea of the appearance and history of many kinds of fine art of which examples, not always fine, are to be found everywhere, to build up right views of the subject, and to lay the foundations of good taste by insuring some familiarity with work of a high standard.

The hour or two each week that is all the time that the claims of art are able to extract from the average headmaster would be quite sufficient if the course of study could be made properly progressive. The whole of a complete system of instruction, from the most elementary phase to the most advanced, could be gone over in the various classes in the course of a week or so, provided that the work of each class had, and kept, its distinct place, taking the knowledge obtained in that below and carrying it further. In a carefully arranged course there would be no such thing as first, second, or third form model-drawing, for instance; such an exercise, if used, would appear once to illustrate certain lessons and become immediately merged into more advanced work.

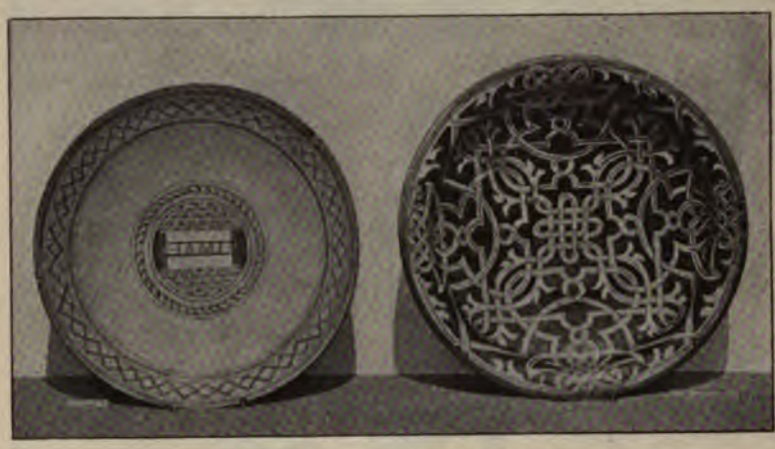

FIG. 4.—Two Italian Plates. Middle of XVIth Century. (Victoria and Albert Museum.)

There is at present a lamentable want of continuity of method in instruction from the beginning. In the kindergarten stage of education, drawing necessarily plays a considerable part in the development of habits of observation and neatness of handiwork. Good examples and copies are often intelligently used to cultivate these faculties. The copying in pencil, chalks, and colour of national flags and heraldic emblems, prints of birds and beasts, flowers and foliage, and all kinds of attractive subjects, is the mainstay of the instruction. Pupils are also shown how to construct designs out of methodically arranged bright patches of colour formed with single strokes of the brush. In consequence of the practice obtained in the kindergarten, or corresponding classes, considerable progress in pencil drawing and in the management of water-colours is made. Work from flat objects, such as tennis racquets,

cricket bats, fans and leaves, hung upon the blackboard, is sometimes added, and the exercises may even go so far as to include studies from simple objects involving some perspective, natural-history drawing from real specimens, and memory drawing. The whole, in short, as a brief introduction, leaves little to be desired, paying as it does due attention to the cultivation of imagination, observation, and power of expression simultaneously.

But the transition from this work to that of the

FIG. 5.—Linen Cover, Embroidered with Coloured Silks.
(Victoria and Albert Museum.)

forms immediately above is abrupt in the extreme. Quite a different atmosphere is encountered in entering upon the regular class-work. A clean sweep is made of the more interesting exercises; all the colour work disappears, sometimes the design as well, perhaps never to be resumed. The traditional freehand, model, and light and shade, thenceforth hold continual sway, in some form or another, until the time arrives when the few pupils whose artistic faculties have survived, or have been developed by influences operating outside the school, are allowed to prepare drawings not conforming to strict classification. Frequently some of these drawings framed and hung upon the classroom walls are exhibited as examples of class work. These "show" drawings are al cognised by school authorities as being the most interesting results produced pupils; good specimens have a strange appearing directly all unnecessary restrai moved. But they are not the logical ou the system of instruction followed; they often isolated instances of perseverance ov difficulties.

Instead of breaking away from the s methods of the kin stage, just at the moment when they a to assume great in would be far more able to continue th further by striving to a wider knowledge same class of subje have been already in to the pupils in a pr way. It would be q sible to continue to and increase the who skill in observation, and colouring, that th have already acquire out specialising in partment of it, whi general artistic know also being extended tural-history drawing designing, work fron of still life, copying productions, photogra casts of fine work, drawing from obje drawings previously might all grow up illustrating and help other forward; work be in all kinds of materials pen-and-ink, or colour to obtain as varied pr possible.

The methodically brush-strokes lay the tions of pattern desig fundamental principle is the arrangement arrangement of given elements in differe The flags and emblems lead naturally to with its marvellously perfected traditiona tive ideas of patterns, beasts, and foliage-li Writing of titles grows into lettering; ment of words into inscriptions, illumina the decoration of books. Careful letterin always be introduced as soon as possible course, and good Roman and Gothic a drawn and committed to memory. It is useful exercise, plainly requiring such r cution, such accurate observation. The letters are so well known that a high sta criticism is soon acquired. The pupils satisfied with bad work, and derive solid

om a happily drawn alphabet. Heraldry tering also afford very suitable subjects for cale chalk drawings on the blackboard or paper. Flower-drawing and drawing from and insects introduce nature and supply il for use later on in elaborating the plain designs that have been copied or invented. t drawing, care should be taken to give the single buds, flowers, or leaves, just so much be carefully and accurately finished in a

The preparation of careless-mannered studies for use in design exercises must be allowed; such drawings, neither designs idies, are worse than useless. The best and flower decoration for the ornamentation erns is that reproduced by a well-trained y from careful study of plants. All these es can be followed out by easy stages from beginnings to complicated developments, oreover can be profit- ought into connection strict course of draw- ading, and colouring jects.

ore sound knowledge spective and of the effects of light and and of reflections is d by the direct study objects than by the ob- n of made-up models ts, cubes, cylinders and , apparatus specially d to exhibit each by itself, with all ous complications re-

Such apparatus is to enable the teacher onstrate the matters llustrate in their sim- rm, but if incessantly drawn from they ac- tultify all powers of observation. Pupils ve acquired from constant practice a certain in drawing and shading groups of geo- l models are frequently quite at a loss if real objects of the same form but different ions or colours is placed before them. All culties of the sphere can be traced equally an orange; the sphere has its use in trating clearly the principle of light, shade lected light. The orange exhibits the same actual operation, and has reality and indi- y as well. A little ingenuity will suggest s of subjects bringing out problems in a more complete way than is possible with y school apparatus. Two or three precisely volumes or other objects that are exactly appearance may be grouped together to an exercise in the expression of things of ne dimensions in different positions: they heaped on a mirror placed flat upon a table reflections also studied. An orange placed white teacup will show how colour is d. A course of observation of little groups life, showing the varied appearance of a few objects of simple forms under different conditions, will be found instructive.

But inasmuch as these exercises, if continued for too long a period, will unduly develop the faculties specially associated with the painter's branch of art at the expense of the rest, it is necessary to associate closely design and natural-history drawing with this work in such a way that all may grow up together. To attempt to lay down a rigid, detailed course of work would be a very unprofitable task; it will suffice to point out by way of illustration how the course already sketched out may be followed to still wider conclusions. We might take such common objects as would usually be selected for the still-life groups and study them over again from quite a different point of view. Books and all kinds of pottery, plain white, coloured or decorated, such as cups and saucers, gingerbeer bottles, &c., might be made to afford a common ground for many kinds of study. If we pass directly from the consideration of the pictorial appearance of each class of objects to the examination of their decoration and history as works of art, using carefully the work of the greatest potters and book-makers as our guides and illustrations, the instruction will gain a new interest and a valuable practical bearing. The possibilities opened up by the prospect of conducting the original brushwork exercises of the kindergarten class along the path followed by the great Oriental and Italian pottery decorators are alluring indeed! The further development of these exercises through the study of the pen and brush drawing of the book-makers, who executed the magnificent work produced before the invention of printing, and even of some of the work of the early printers themselves, would cover a noble field of design. It would have the advantage of being eminently practical—that is, it could be worthily carried to its highest perfection, should the pupils grow sufficiently proficient, on paper, with pen, brush and colours. It would bring together a number of the subordinate studies already undertaken, the lettering, heraldry, flower-

FIG. 6.—Elementary Studies in Pattern Designing.

drawing, and pattern-work, and exhibit them all in a proper and practical relationship to each other, and it would form an excellent starting-point for the prosecution of further studies.

The pupils should gain some knowledge of the great types of decorative brush designs by copying coloured reproductions or photographs of work of the finest quality, such as is shown in Figs. 1, 2, 3, and 4. They might then draw out very neatly a sheet of sample pieces of patterns collected from numerous copies; in the four left-hand squares of Fig. 6, designs taken from the photographs illustrating this and the preceding article are so collected. They would soon be in a position to produce design exercises on the lines laid down by their models by taking each design and redrawing it with the smallest possible change, as is done in the four right-hand squares of Fig. 6. It is much more educational to work within well-defined limits upon the traditional stock-in-trade of generations of designers than to fall back upon the latest inventions of the newest brushwork copy-books and diagrams. The heraldry, alphabets, castles, lions, crowns, &c., occurring on the examples would form the material for separate sheets of studies; their history and signification should always carefully be noted on the drawings. All these exercises should be worked in connection with drawing and painting from still-life groups composed of, amongst other things, plain modern pottery of good form.

The use of coloured reproductions of pages of ancient illuminated manuscripts or finely decorated early printed books is also advisable; copying this work, which is but decoration of another very similar type, will add a refining influence to the brush work and give variety. Examination of the materials that make up the decoration of the illuminated manuscripts will show that they are much the same, more or less modified, as those that were found upon the pottery examples. Familiarity with the figures, draperies, architectural forms, and schemes of colouring, found in the miniatures will prepare the pupils for another stage of the work, including exercises in both observation and invention of a still more advanced character.

THE following resolutions were adopted by large majorities at the annual meeting of the Association of Assistant-mistresses:—(1) That the association would desire to see the establishment of a definite form of agreement between the assistant-mistress and the governing body of the school. (2) That the permanent appointment and dismissal of assistant-mistresses should rest with the governing body of the school, on the recommendation of the headmistress. (3) In cases where the power of appointment and dismissal rests with the headmistress, she should be required to furnish the governing body with a full report of all proposed changes in the staff. (4) In all cases of dismissal the assistant should have the right of appeal direct to the Board of Education. (5) That the period of probation should not be longer than two terms. (6) That, in the opinion of this association, the headmistress should have the right to suspend an assistant-mistress from attendance in the school, but such suspension should be immediately reported to the governors. (7) That the agreement should be terminated only at the end of a school term, and after notice given not later than two months before the end of the term.

SELECT LISTS OF BOOKS FOR SCHOOL LIBRARY.

IN his article last month Mr. Lupto Librarian of Marlborough College, des the formation and explained the manag of a school library. To supplement the gu given in that article we have asked well-l teachers to prepare short lists of books, subjects they represent, to which they thi pupils of a school should have easy access. lists are intended to include the best boo to be representative, but it must be unde that there are many other valuable books will find a place in a well-equipped library. lists given below rather tend towards th ducible minimum without which no libr quite workmanlike. These lists will be fol in future issues, by others dealing with the subjects that enter into a school curriculu into school life.

HISTORY.

By Prof. F. J. C. HEARNSHAW, M.A., LL.M Hartley University College, Southampton.

A.—LENDING LIBRARY.

Classical History.

"History of Greece." J. B. Bury. (Macr 8s. 6d. or 25s. net. Or "History of G A. Holm. 4 vols. (Macmillan.) 25s. "Outlines of Roman History." H. F. P (Rivingtons.) 6s.
"Student's Roman Empire." J. B. (Murray.) 7s. 6d.
"City States of Greece and Rome." Fowler. (Macmillan.) 5s.
"Student's Ancient History of the East Smith. (Murray.) 7s. 6d.

General History.

"European History." G. B. Adams. millan.) 6s. 6d. net. Or "Periods o pean History." 8 vols. A. Hassal (Rivingtons.) 48s. net.
"Holy Roman Empire." J. Bryce. (Mac 7s. 6d.
"History of Civilisation in Europe." F. (Bell.) 3s. 6d.
"Decline and Fall." E. Gibbon. New edited by J. B. Bury. 8 vols. (Me 48s. net.
"A Student's History of the United E. Channing. (Macmillan.) 7s. 6d.
"The American Commonwealth." J. 2 vols. (Macmillan.) 25s.

English History.

"Short History." J. R. Green. (Mac 8s. 6d. or £2 net.
"History of England." York Powell an Longmans.) 7s. 6d.

"English Constitutional History." Taswell-Langmead. Fifth edition. Edited by P. A. Ashworth. (Stevens and Haynes.) 18s.
"Growth of British Policy." J. R. Seeley. 2 vols. (Camb. Univ. Press.) 12s.
"Expansion of England." J. R. Seeley. (Macmillan.) 4s. net.
"The Expansion of the British Empire." W. H. Woodward. (Camb. Univ. Press.) 4s. Or "The Growth of the Empire." A. W. Jose. (Murray.) 6s.
"Landmarks in English Industrial History." Lee-Warner. (Blackie.) 5s.
"Introduction to History of Church of England." H. O. Wakeman. (Rivingtons.) 7s. 6d.

Archaeology.

"Manual of Roman Antiquities." Ramsay and Lanciani. (Griffin.) 10s. 6d.
"Manual of Greek Antiquities." Gardner and Jevons. (Griffin.) 10s. 6d.

Biography.

"Twelve English Statesmen." Various. (Macmillan.) 30s.

B.—Reference Library.

Classical History.

"Atlas Antiquus." H. Kiepert. (Sanborn.) 3s. 6d.

General History.

"Histoire Générale." A.D. 395-1900. 12 vols. Lavisse and Rambaud. (Armand Colin, Paris.) 192s. Or "Cambridge Modern History." A.D. 1453-1900. (To be completed in 12 vols.) Acton and others. (Camb. Univ. Press.) 150s.

English History.

"History of Civilisation in England, etc." H. T. Buckle. 3 vols. (Longmans.) 24s.
"Social England." H. D. Trail. 6 vols. (Cassell.) 12s. to 14s. net. each.
"New Student's Atlas of English History." E. Reich. (Macmillan.) 10s. net. Or "Atlas of English History." S. R. Gardiner. (Longmans.) 5s.
"Dictionary of English History." Low and Pulling. (Cassell.) 7s. 6d.

Archaeology.

"Concise Dictionary of Greek and Roman Antiquities." F. W. Cornish. (Murray.) 21s.

Biography.

"Dictionary of Biography." Patrick and Groome. (Chambers.) 10s. 6d.
"Index Volume to Dictionary Nat. Biography." S. Lee, editor. (Smith, Elder.) 25s.

ENGLISH LITERATURE.

By Clara L. Thomson.

"Chambers' Encyclopædia of English Literature." (Chambers, Edinburgh.) 3 vols. 10s. 6d. net each.
"The English Poets." Edited by T. H. Ward (Macmillan.) 4 vols. Vols. I., II., III., 7s. 6d. each; Vol. IV., 8s. 6d.
"English Prose." Edited by Sir Henry Craik. (Macmillan.) 5 vols. Vols. I.—IV. 7s. 6d. each; Vol. V., 8s. 6d.
"The Deeds of Beowulf." Translated into Modern Prose by John Earle. (Clarendon Press.) 8s. 6d.
"The Mabinogion." Translated by Lady Charlotte Guest. Edited by Alfred Nutt. (Nutt.) 2s. 6d.
"The Student's Chaucer." Edited by Dr. W. W. Skeat. (Clarendon Press.) 7s. 6d.
"The Morte D'Arthur." Globe edition. (Macmillan.) 3s. 6d.
"Spenser." Complete Works. Globe edition. (Macmillan.) 3s. 6d.
"Shakespeare's Plays and Poems." The Eversley Edition. Edited by Prof. C. H. Herford. In 10 vols. (Macmillan.) 4s. net each vol.
"Bacon's Essays." Golden Treasury Series. (Macmillan.) 2s. 6d.
"Milton's Poetical Works." Edited by the Rev. H. C. Beeching. (Clarendon Press.) 7s. 6d.
"The Pilgrim's Progress." Edited by Dr. C. H. Firth. (Methuen.) 5s.
"Essays of John Dryden." Selected and Edited by W. P. Ker. (Clarendon Press.) 2 vols. 10s. 6d.
"Gulliver's Travels." By Dean Swift. With Introduction by Sir Henry Craik, K.C.B. (Macmillan.) 3s. 6d.
"Addison. Selections from Papers in the Spectator." Edited by T. Arnold. (Clarendon Press.) 7s. 6d.
"Robinson Crusoe." By Daniel Defoe. Edited by Henry Kingsley. (Macmillan.) 3s. 6d.
"Boswell's Johnson." (Macmillan.) 3 vols. 3s. 6d. net each.
"Wordsworth's Complete Poetical Works." With an Introduction by John Morley. (Macmillan.) 7s. 6d.
"Coleridge's Complete Poetical Works." Edited by J. Dykes Campbell. (Macmillan.) 7s. 6d.
"Scott's Poetical Works." Globe Edition. (Macmillan.) 3s. 6d.
"Old Mortality." By Sir W. Scott. Border Edition. (Macmillan.) 3s. 6d.
"Essays of Elia." Edited by Augustine Birrell. (Dent.) 2 vols. 3s. 6d. each.
"Heroes and Hero Worship." By T. Carlyle. Library Edition. (Chapman and Hall.)
"Esmond." By W. M. Thackeray. (Macmillan.) 3s. 6d.
"David Copperfield." By Charles Dickens. Fireside edition. (Chapman and Hall.) 3s. 6d.
"Browning's Poetical Works." (Smith, Elder.) 2 vols. 9s. each.

"Tennyson's Poetical Works." (Macmillan.) 7s. 6d.
"Essays in Criticism." By Matthew Arnold. (Macmillan.) 2 vols. 4s. net each.
"Virginibus Puerisque." By R. L. Stevenson. (Chatto and Windus.) 6s.

GEOGRAPHY.

By F. D. HERBERTSON., B.A. (Lond.).
Author of "Descriptive Geographies from Original Sources."

FOR REFERENCE LIBRARY.

(One of the following.)

"Handbook of Geography." A. J. Herbertson. (Nelson). 1904.
"Regions of the World." 12 vols. H. J. Mackinder. (Clarendon Press.) 7s. 6d. each.
"International Geography." H. R. Mill. Third edition. 1903. (Newnes.) 15s.
"Universal Geography." E. Réclus. 19 vols. Second-hand.
Stanford's "Compendium of Geography." 12 vols. 15s. each.

FOR LENDING LIBRARY.

"Descriptive Geographies from Original Sources." F. D. Herbertson. 6 vols. (Black.) 2s. 6d. each.
"Our Neighbour's" Series. 8 vols. already published. Various authors. (Newnes.) 3s. 6d. each volume.
"Pen and Pencil Series." (For the Illustrations.) Volumes for all the principal countries of the World. (Religious Tract Society.) 8s.

BOOKS OF TRAVEL, ETC.

"Voyage of the Sunbeam." Lady Brassey. (Longmans.) 1s.
"In the Trades, Tropics, and Roaring Forties." Lady Brassey. (Longmans.) 7s. 6d.
"From North Pole to Equator." A. E. Brehm. (Blackie.) 15s.
"Impressions of South Africa." J. Bryce. (Macmillan.) 6s.
"From Adam's Peak to Elephanta." E. Carpenter. (Sonnenschein.) 15s.
"Voyage of the Beagle." C. Darwin. (Ward, Lock & Co.) 2s.
"Land of the Midnight Sun." P. B. Du Chaille. (Murray.) 36s.
"Forests and Deserts of North America." P. Fountain. (Longmans.) 9s. 6d.
"Wandering Scholar in the Levant." D. G. Hogarth. (Murray.) 7s. 6d.
"Himalayan Journals." Sir J. D. Hooker. (Ward, Lock & Co.) 2s.
"Naturalist in La Plata." W. H. Hudson. (Chapman and Hall.) 16s.
"British Central Africa." Sir H. H. Johnston. (Methuen.) 18s.
"At Last." C. Kingsley. (Macmillan.) 3s. 6d.
"Where Three Empires Meet." E. F. Knight. (Longmans.) 3s. 6d.
"Eskimo Life." F. Nansen. (Longmans.) 16s. Second-hand only.
"In the Guiana Forest." J. Rodway. (Fisher Unwin.) 3s. 6d.
"Heart of Africa." G. Schweinfurth. 2 vols. (Sampson Low.) 7s.
"China." E. R. Scidmore. (Macmillan.) 8s. 6d.
"Historical Geography of the Holy Land." G. A. Smith. (Hodder and Stoughton.) 15s.
"The River Congo." Sir H. M. Stanley. (Sampson Low.) 3s. 6d.
"Sketches of Nature in the Alps." F. von Tschudi. (Longmans.) Second-hand only.
"Travels on the Amazon." A. R. Wallace. (Ward, Lock & Co.) 2s.
"The Malay Archipelago." A. R. Wallace. (Macmillan.) 7s. 6d.
"Scrambles among the Alps." E. Whymper. (Murray.) 15s.
"Land of the Lion and the Sun." C. J. Wills. (Ward, Lock & Co.) 2s.

(To be continued.)

THE TRAINING OF SECONDARY-SCHOOL TEACHERS AT THE UNIVERSITIES.

II.—THE OXFORD TRAINING SCHOOL.

THE oldest of our Universities has the newest Chair of Education. It was only in April last year (1903) that Oxford established a separate Delegacy for the control of the training of secondary-school teachers and a Readership in Education. But the work was really begun in 1896, and it was only its success and increasing extent which brought about the change in organisation. A comparison between 1896 and 1904 will show to what an extent modern educational views have found their way into the older Universities in less than a decade.

In 1896, amid many gloomy prognostications that the office would be a sinecure, and not a few suggestions that education would not suffer if it were, Congregation passed a decree authorising the Local Examinations Delegacy, to appoint instructors and instituting an examination in the "Theory, History and Practice" of Education. In April, 1897, Mr. Keatinge and Miss Cooper, who have since presided over the school under various names, came into residence. But there were no pupils. The gloomy predictions seemed about to be realised when the number of men-students, after rising to four, fell back to one. Since then no less than 320 students (of whom 200 were men), have worked for the Diploma, and at the present moment there are thirty-one men and twenty-five women taking the course; nor is this an exceptional year. We have the Reader's authority, too, for saying that the quality of the work has improved as the number of students has

ncreased. Nearly all the present candidates are graduates in honours (eight of them having taken first-classes) who are remaining in residence for an additional year. The University recognised this success last year by putting the organisation on a permanent footing under a separate Delegacy and appointing Mr. Keatinge, who had successfully presided over its growth, to the Readership. The Delegacy includes many of the most prominent members of the University, some of whom have been active promoters of the training movement from the beginning. Only those engaged in the actual conduct of the work know how much its success is due to the efforts and sympathy of the Rector of Exeter (Rev. W. W. Jackson), Mr. Arthur Sidgwick, and Mr. H. T. Gerrans.

The course consists of three terms' work in Oxford, or in the case of honours men, who form the majority, of two terms, with a month's practical work as a student-teacher at a school away from Oxford at the beginning or end of each term, of an examination and of a term's probation at a recognised secondary school. During the portion of the work that takes place in Oxford the combination of class-teaching, criticism lessons, lectures, reading and essay writing should occupy a student for not less than eight hours daily. Candidates who qualified for their degrees not later than June, 1898, are granted Diplomas after a shorter period of residence. For these a course of four weeks in the summer holidays is sufficient. These summer courses are largely attended. Among the students have been masters from Winchester, Clifton, Charterhouse, Cheltenham, and other well-known schools, as well as mistresses, both head and assistant, from the leading high schools for girls.

In the course at Oxford, theoretical and practical work go hand in hand. Throughout the lectures and the weekly essays are balanced by criticism lessons and ordinary class-teaching.

The lectures, some four a week, are directed at first to present a general view of the problems of education and of the position of the chief educational writers, while later they deal separately with the difficulties involved in each of the chief subjects of a secondary curriculum. Some of the lectures are given by well-known schoolmasters. During the present term Mr. R. Deakin, headmaster of Stourbridge Grammar School, is delivering a course of lectures on the teaching of mathematics, and Mr. C. J. Baker, senior science master at Shrewsbury School, another course on the teaching of physical science. The reading suggested by the lectures is regulated by the weekly essays, which deal both with philosophical and with historical questions involved in education, with its psychological basis as well as with problems of curriculum, organisation and method. The nature of the reading will be made more apparent when we come to describe the examination.

The Oxford School does not forget to practise the doctrine which it impresses on future teachers—that knowledge is real only when it can be applied. Three criticism lessons a week with classes of various ages and in different subjects give opportunities for applying abstract principles to concrete cases; the discussions on these lessons, which are nearly always marked by a desire to bring out useful points and by a freedom from captious criticism, are undoubtedly one of the most valuable parts of the course. These lessons, it may be added, form series, and the value of a lesson is always judged from its use as a part of the series quite as much as on its own merits. A neglect of this consideration may become a serious danger in the practical part of an educational course.

The ordinary class-teaching (some five to ten hours weekly for each student) is conducted under supervision in secondary and in elementary schools, largely in the latter. This has considerable advantages. In the first place, the teacher in an elementary school learns to rely on himself. What the class learns is what he teaches. He cannot, even if he wishes, fall back on the hearing of home-work. In the second place, an elementary-school class responds more readily to good teaching, as opposed to other means of discipline. The teacher has thus a ready test of the efficacy of his teaching. It is well that a man should have learnt to rely on this best means of keeping discipline before he has to consider the other means to which he must resort when this fails. Thirdly, the large size of the classes brings out his power of manipulating a class.

The use of elementary schools for habituating students to take charge of large classes does not necessitate any neglect of the methods of teaching suitable for secondary schools. The criticism lessons are given to smaller classes of older boys, and in addition much of the practical work takes place in the periods of the school term which fall during vacation, that is, in October before the Michaelmas term and at the end of the other two University terms, when a number of well-known schools[1] welcome the men who are training. This provides an additional opportunity for seeing good teaching, of teaching under experienced supervision and of entering thoroughly into school life.

The diploma examination, held twice a year in April and in September, consists of four papers. The style of questions resemble those set in the "Greats" school; hence they guide reading without keeping it in a groove. The character of the reading can readily be understood by a perusal of a set of these papers. The first paper deals mainly with the philosophical basis of education, as affecting both aim and method, and is quite general. The second deals with the history of educational theory. A slighter knowledge of tendencies from the Renascence to the present day is expected; but more stress is laid on a special period, which is changed from time to time; at present it is the eighteenth century, with Rousseau, Kant and Pestalozzi as the specified

[1] The list includes Clifton; Cheltenham; Christ's Hospital; Elizabeth College, Guernsey; Nottingham High School; Wyggeston School, Leicester; Kelly College, Tavistock; Stourbridge Grammar School.

authors. This does not imply that either the Herbartian school or recent English reformers are neglected. Men will read them, as they read the exponents of the traditional views, in any case: though many would probably not of their own accord trace their ideas to the fountain head without the guidance that is given. Some knowledge of contemporary foreign systems is also required. The third paper brings us within the class-room, to points of practical detail, and here candidates are expected to have considered the teaching of several subjects other than that in which they are examined in the fourth paper, where each candidate selects the teaching of the subject which he intends especially to make his own. The standard for "distinction" in the examination is about that of a first class in a final Honour School; a "pass" is about the standard of a low class in Honours.

The examination, like the other arrangements of the Diploma Course, is placed, as far as is possible, under the control of members of the teaching profession. Among the examiners have been the Rev. G. C. Bell, late master of Marlborough, Rev. Dr. Fearon, late headmaster of Winchester College, Rev. Canon Glazebrook, headmaster of Clifton College, Rev. W. Penney, headmaster of Elizabeth College, Guernsey; while Dr. Turpin, of Nottingham High School, Mr. Hawkesworth, of Rugby, Mr. Godfrey, of Winchester, and Mr. F. B. Kirkman, late of Merchant Taylors', have acted as assessors for special subjects. Mr. Arthur Sidgwick, Prof. Stout, and Prof. Alexander have also examined.

The examination is followed by a term's probation at a recognised secondary school. Three certificates must be presented to the Delegacy before a diploma is granted; one from the reader in education; a second from the headmaster under whom the candidate has spent the probationary period, certifying teaching ability and the power of maintaining discipline; and a third from the examiners certifying that the candidate has passed or taken distinctions in the examination.

Some apology is due to a large body of readers for having described the work exclusively from the masculine point of view. The body of ladies studying under the able guidance of Miss Cooper are almost as numerous as the men and at least as zealous. The writer can only plead, firstly, that he has not the requisite knowledge; secondly, that the study of education is no new thing among women students. The feature which most strikes one who has taken the course after some years' absence from Oxford is the interest shown by the men. We doubt whether any of the final schools of the University produces so widespread an interest among the whole number of its candidates. Further, the course is taken in practically equal proportions by men who have taken their degrees in classics, mathematics, science and history. These two facts speak volumes for the adaptability of the older Universities and their full recognition of modern requirements.

THE MATHEMATICAL ASSOCIATION.

WE directed attention, in our issue of last December, to the part played by the ASSOCIATION FOR THE IMPROVEMENT OF GEOMETRICAL TEACHING in initiating the movement for reform in mathematical education. We gave a list of the principles laid down by the Association in 1871 for adoption in any new text-book, and suggested an instructive comparison of these with the recommendations by the committees of the British and Mathematical Associations now at last sanctioned by the Universities of Oxford and Cambridge.

We proceed to supply a few more details of the history of the old A.I.G.T., of its conversion into the Mathematical Association, and of the place which, under the new name, it now holds as an educational institution.

The work of the A.I.G.T. may be grouped under the following heads:

(*a*) Preparation of a "Syllabus of Plane Geometry," and agitation for its recognition by examining bodies.

(*b*) Preparation of "Elements of Plane Geometry," supplying proofs of the propositions contained in the syllabus.

(*c*) The extension of the work of the Association to other branches of elementary mathematics.

(*d*) Arrangements for the reading and printing of papers by various mathematicians on subjects of interest to mathematical teachers.

It took four years to complete the syllabus, though the part dealing with the subject-matter of Euclid I.-IV. was so far complete in 1873 as to serve as a ground-work for the third[1] edition of the "Elements of Geometry," by Mr. J. M. Wilson, of Rugby, a book which deserves a place on the bookshelf by the side of more recent geometries.

The subject of proportion and the treatment of incommensurables naturally gave rise to much discussion, and it was not until 1875 that the corresponding part of the syllabus, after exhaustive criticism, was passed at a general meeting. The syllabus was then published by Messrs. Macmillan. It was submitted to a British Association committee, who reported on it at the Glasgow meeting in 1876 at considerable length, and recommended it to the favourable consideration of the universities and other examining bodies. This recommendation seems to have fallen rather flat. There was then no general feeling of unrest and of misgiving that all was not well with our system of education comparable to that which lay behind Prof. Perry's vigorous attack on our antiquated methods twenty-five years later in the same city. Examining bodies probably excused themselves, where they thought excuse necessary, by the plea that there was no demand for change on the part of the

[1] We refer those interested in tracing the gradual spread of the movement more closely than the limits of this article will allow to the prefaces to this edition. Among much interesting matter the following seems to deserve quotation: "Much of what is most characteristic of the book (first edition of Book I.) is due to Dr. Temple. It was at his wish that I undertook the work, as he is strongly impressed with the need of it."

y of teachers, and teachers, more legiti-
iat they were bound by the fetters of the
ion system.

iblication of the completed syllabus was
in 1878, by that of the fourth edition of
"Elementary Geometry," based on the
syllabus, the "Elements of Plane Geo-
ublished by the Association, not appearing
years after—Part I., 1884, Part II., 1886.
instructive to compare the slow and
: procedure of the Association with the
idividual authors, each with his own text-
iich began in 1902, and has scarcely yet
The difference is not entirely due to the
l slowness of action of corporate bodies,
n mathematics, as in other matters, the
of those who are capable of more or less
t criticism is always greater than that of
io will expedite business by constructive
The rapidity with which things geometrical
wadays is partly due to the work done by
ciation twenty-five or thirty years ago in
home the very idea of the possibility of
to say nothing of its desirability, to the
ass of teachers, and partly due to the
fluence of teachers like Hayward, of
and Levett, of Birmingham, on the pupils
y them.

ublication of the complete work afforded
able opportunity for addressing the Uni-
and Civil Service Commissioners, but the
amounted to little more than this:—
sequence and axioms being retained, any proof
mitted. The consequence was the issue of
er of new editions of Euclid's Elements,
to a great extent of his cumbrous verbiage
l supplied with exercises and addenda.
ave also had their use in preparing for the
freedom, and in rendering less abrupt the
n from Potts or Todhunter to the manuals
ming attention. They have done something
rendering less strange the use of loci, and
s of symmetry, projection, inversion, &c.

far we have dealt with the work done by
ciation in influencing the public opinion of
s of teachers. We have considered this
its indirect but not unimportant work at
ngth because, though other changes must
d ought to come in time, we believe that
nt the changes have been quite as great as
able; reformers have, in fact, "bitten off
a as they can chew," and those responsible
ding mathematical teaching along the
es must look to it that liberty is not allowed
nerate into license.

iow turn to that part of its work which
l its effect chiefly on the members of the
tion. Up to 1883 the meetings had been
devoted to discussions on the syllabus and
ok, and on the reports of various com-
on the other subjects. In that year an
ion was made by the commencement of a
of papers on various branches of mathe-
read at the Annual Meeting, and after-
ublished in the reports. This has probably done much towards keeping up interest in the Association as a bond of union among mathematicians of various classes engaged in teaching. There seems to be no record as to the origin of this new and attractive feature. The start was a strong one, with papers by Besant, Minchin, and Lamb. Among other mathematicians of eminence who have from time to time read papers may be mentioned, Rev. C. Taylor, D.D., "Discovery and Geometrical Treatment of the Conic Sections" (1884); "New Treatment of Hyperbola" (1890); R. B. Hayward, "The Correlation of the Different Branches of Elementary Mathematics" (1886); Prof. A. Lodge and Prof. J. Larmor.

Many of these papers are still worth careful study. In the very first Mr. Besant struck the note sounded still more loudly by Prof. Perry, at Glasgow.[1]

Other papers have been given by experienced teachers, such as Mr. Heppel, whose "Use of History in Teaching Mathematics" deserves reprinting.

Most of the work done in the committees appointed in 1881 to report on defects in the usual methods, order, or range in teaching subjects other than elementary geometry was as a rule that of one or two individuals, and it was found that it would have been almost as valuable to the teaching world without the delay and expense caused by the intervention of committees. The continued existence of the Association gives evidence of a widespread desire on the part of teachers to become acquainted with the methods of other teachers. *The Mathematical Gazette* was started in the hope of gratifying this desire. The published programme announced the intention of keeping, as a rule, strictly to such school subjects as arithmetic, algebra, geometry, trigonometry, and mechanics, though not absolutely excluding such higher subjects as differential and integral calculus.

This programme has been closely followed, though occasionally such higher matters as Bolyai's "Science Absolute of Space" and Von Staudt's "Geometrie der Lage." There seems to be no objection to the insertion from time to time of such papers, provided that they do not occur too frequently, and so long as the main object of the *Gazette, to be useful to teachers*, is kept well in view. In fact, they will be welcomed by those who like to have an occasional glance into regions of thought which their own occupations prevent their hoping to explore; they may be regarded, in fact, as arches

> where thro'
> Gleams that untravelled world

[1] "The fact constantly before us at Cambridge, that mechanics are being studied with a view to success in examinations, tends to make us forget the importance of the practical applications to daily life of a knowledge of mechanics, and the temptation is to luxuriate in the flowery and ornamental problems which sometimes form the staple of examination questions. The fact must be recognised that millions of people must acquire a knowledge of mechanics, practical or theoretical, or both, who are not going to be tested by a Cambridge examination. The carpenter and the builder, the shipwright and the architect, must acquire a perception of the laws of mechanics to fit them for their avocations."

of whose existence it may be well to know, though there may be no hope of penetrating it.

But probably what most of the readers of the *Gazette* appreciate are its articles bearing on matters of practical teaching, not only such as those developing and modifying the views expressed at Glasgow, but such as those by Prof. Barrett and Mr. C. S. Jackson "On the Slide-rule and its use in Teaching Logarithms"; its problems and solutions; and its reviews of newly-issued works.

Thus the *Gazette* has done much to help the Mathematical Association (the new name was adopted in 1897) to discharge one of its most useful functions—that of keeping those teachers who chose to profit by its existence in a state of

Photo.] [*Elliot and Fry.*

Prof. A. R. Forsyth, M.A., F.R.S.
President of the Mathematical Association.

growth. Without continued growth in the teacher, teaching tends to lose the power of stimulating the minds of the students it affects to guide.

Of the value of this stimulation those who are best acquainted with the life of a teacher will have little doubt. Few careers are more calculated to lead to such intellectual isolation in his own subject as that of a mathematical scholar appointed as a master in a secondary school. He is too likely to find it difficult to keep up the enthusiasm with which doubtless in many cases he starts, without some sort of companionship and correspondence with others of his own profession, and a teacher who has no enthusiasm is to be pitied, though perhaps not so much as his pupils are. Even if, as some of us venture to hope, schemes of post-graduate study for teachers are esta —this may be possible when educational gives way to educational system—the Asso will still have its uses. Its greatest benef naturally fall to, and be most appreciat those who take the most active part i tributing to its work; to those, indeed, w most up to the spirit of the words of Bacon[1] appear as the motto of the Association cover of the *Gazette*.

The *Gazette* was first started with Mr. Langley as editor. It was of quarto siz appeared three times a year. At the end years' pressure of other work compelle Langley to give up the editorship, which ha carried on in succession by Dr. F. S. Ma and Mr. W. J. Greenstreet, the latter of still continues to occupy the post. When t change of editorship was made it was panied by one in the form of the *Gazette*, w now published in octavo form. It appe times a year instead of twice.

For the great part taken by the Associatio 1901, in working out the practical steps ne to give effect to the remarkable general agr on most important points at the Glasgow and to the rapid success which has atten labours, we need do little more than draw at to the accounts already published in The World and to the programmes of exa bodies. These and its official recognit university authorities have given it renewed it is hoped that it will deal effectively w portant problems in mathematical educatio still await solution. Two of the papers ann for the annual meeting this year deal wi important questions for the immediate Mr. C. S. Jackson's "An Account of a Discussion on the Possibility of Fusion Teaching of Mathematics and Science," a C. A. Rumsey's "On Advanced School Co Mathematics." For further information a meetings, conditions of membership, &c., the is referred to the Hon. Secs., Mr. C. Penc M.A., St. Paul's School, London, W.; a H. D. Ellis, M.A., 12, Gloucester Terrace Park, W. It remains to give a list of the mathematicians who have honoured the Ass by accepting its presidency: Dr. T. A. Dr. R. B. Hayward, Dr. C. Taylor, Prof. Minchin, Prof. J. Sylvester, Dr. R. W Dr. J. Larmor, Prof. A. Lodge, Sir R. Mr. J. F. Moulton, and Prof. A. R. Forsyth portrait we give. It is fortunate for the Ass that at such an eventful time as the pr should have the advantage of Prof. F guidance in its counsels, distinguished as h only for his scientific attainments, but also acquaintance with the needs and difficu mathematical education.

1 "I hold every man a debtor to his profession from the whic course do seek to receive countenance and profit, so ought they endeavour themselves, by way of amends, to be a help and a thereunto."

A NEW BOTANICAL LABORATORY.

By LILIAN J. CLARKE, B.Sc.
James Allen's Girls' School, Dulwich.

THE Botanical Laboratory recently established at the James Allen's Girls' School was built in order that experimental work on living plants might be carried on throughout the year. During a great part of the year botanical experimental work can be arranged in any room—for six years the chemical laboratory was used—but in the winter seedlings and plants die before experiments can be finished, unless the room be heated day and night. It is especially important that pupils should carry on indoor experimental work in the winter, as no experiments can then take place in botany gardens, and it was therefore arranged that the new botanical laboratory—the first of its kind—should be kept at a temperature of 50° F., day and night, during the winter months. The laboratory is heated by means of two rows of hot-water pipes, which are connected with a low-pressure furnace just outside the building.

The laboratory is built of red brick, and has a glass sloping roof, and fourteen casement windows which open outwards. It is 22½ ft. long, about 16 ft. wide, and 13½ ft. high at the highest part. The floor is a tiled one, sloping slightly from the middle towards the sides, and on two sides is a channel, so that any water spilt on the floor drains to the sides and is carried away down the channel to an outside drain. On three sides of the laboratory polished teak benches have been constructed 2 ft. and 2½ ft. wide, and at these benches the girls work, setting up experiments, drawing from nature, &c. Gas pipes are fitted all round the room, and twenty-two bunsens can be used on the benches if required. In case an unusually large class should be at work in the laboratory, and there should not be sufficient room at the benches, a large table has been placed in the centre of the room. Under the benches are cupboards in which the girls keep tripods, clamp stands and other apparatus, and when the laboratory was planned care was taken that in some cupboards it would be possible to carry on experiments in the dark. Drawers for smaller apparatus, such as files, thermometers, &c., are provided in several parts of the room.

In some experiments, such as those connected with movements of plants, it is important that there should be no vibration. A brick table has therefore been made in a corner of the laboratory; two brick pillars, the complete width of the table, support a slab of slate 1¼ inches thick, making a very firm structure.

The fourth side of the room is fitted up with a sink, draining board, shelves, a tank and blackboard. The tank was made in order that the girls, while at school, might study living water-plants. It was felt that it would be a great advantage for the plants to be in rain water, so arrangements were made for the rain water which fell on the roof of the laboratory and the adjacent building to be caught in the tank. A pipe from the roof delivers water into one end of the tank, and a partition (through the lower part of which the water flows) cuts off that end from the larger portion in which the plants live. The tank can be filled with tap water when rain water is scarce, but up to the present no inconvenience has been caused by drought.

[*Photo. by the Architect, Arthur J. Gale, F.R.I.B.A.*

James Allen's Girls' School, Dulwich. Exterior of Botanical Laboratory.

By means of a tap in the bottom the tank can be emptied when it is necessary to clean it. The tank is 7 ft. long, 2 ft. wide, and 1½ ft. deep. It is made of slate, and has a glass side. It has been found most useful: water lilies, iris, duckweed, water-soldier, frogbit, water-crowfoot, azolla, and many other plants have been grown in it. It is much better for the girls to study the living plants than to hear about them, and for many reasons it is much easier in school time for a class of girls to study the plants in a tank than to visit a pond. We do not think that we give them

a perfect representation of the life of water plants, but as far as we can we have an indoor pond. There is in the tank an artificial marsh in which we grow plants which are not accustomed to living in water, but need more water than is found in most soils. A tray 4½ inches deep, and possessing a perforated bottom, is supported on four legs, and screws are arranged so that the bottom of the tray can be brought level with the top of the water.

On the back wall of the laboratory over the bench are cupboards with glass doors, a seed incubator, and arrangements for climbing plants. At the top of the cupboards are pigeon-holes in which various dry fruits are kept: the fruits are classified in one part according to their dehiscence, and in another part according to the way in which they are dispersed. The girls help to keep the pigeon-holes well stocked. The lower part of the cupboards contains simple microscopes, balances and weights.

[*Photo. by the Architect, Arthur J. Gale, F.R.I.B.A.*

James Allen's Girls' School, Dulwich. Interior of Botanical Laboratory.

The incubator or seed germinator is most useful when numbers of seedlings are needed by the girls. It is a box made of zinc with a sloping lid of glass, and is heated by four jets of gas. Over a copper tray containing water is a movable tray in which deep porous pots are placed, and in these porous pots seeds are germinated. The pots can stand in water, or damp sawdust, or earth, and at the highest point of the germinator there is a space of twelve inches between the bottom of the pots and the surface of the glass. A mercury regulator at the side prevents the apparatus from being overheated.

The arrangement for climbing plants is fixed to the wall. Horizontal steel wires, twelve inches apart, are attached to pieces of angle-iron. At intervals of one foot are placed vertical pieces of wood, and at the point where the wires cross the wood small staples are driven in to keep the in place. It has been found that the dis between the vertical supports is too great, has been arranged to place vertical wires be the pieces of wood, so that there will only distance of six inches between the vertical sup Several climbing plants are growing in the la tory, and the girls can study indoors the v ways in which plants climb. Of course, in cho the plants it is well to choose typical one ones which do not die down in the winter.

With regard to the equipment of the labor apparatus has been bought which is found in laboratories—balances, weights, clamp s bunsens, tripods, gas jars, glass tubing, files tubes, &c. Our work in the new labo resembles in many points the botanical wo past years — an accou which appeared in a vious number of The S World[1] — but there is more scope for phys experiments, as these throughout the year, there is more space able.

In former years some perennials growing in tions in the chemical la tory survived the winte several were killed by Now it is hoped that a water-culture pere (numbering this year forty) will live throug winter, and in the spri shall have numerous ples of buds unfolding miniature trees. In ways the botanical labo has been of great s during the past year in bling the girls to lea means of their own observations and experim and many other arrangements are being ma means of which the out-door work carried the botany gardens will be supplemented b work in the laboratory.

"I look across our English world and see clear distinctly the two vices which, more than anything el obstructing the wheels of progress—drinking and ga They are apparent to the least observant of men."—G. F.

"Strangely enough they make games of hazard a occupation even when sober, and so venturesome are the gaining or losing, that, when every other resource has fai the last and final throw, they stake the freedom of the persons. The loser goes into voluntary slavery: thou younger and stronger, he suffers himself to be bound an Such is their stubborn persistency in a bad practice; they selves call it honour."—Cornelius Tacitus, "Ger Translated by Church and Brodribb, London, 1877.

1 The School World, June, 1903.

CLASSICS AS AN INTELLECTUAL TRAINING.[1]

THE study of the classical languages, of the life, history and literature of ancient Greece and Rome, have until yesterday held a position of supremacy in the field of higher educa ion which was perhaps something more than was their due—a supremacy so unquestioned, at any rate, that its votaries ave until recently scarce deigned to examine the grounds on which it rested, still less troubled themselves to explain them to the outside world. Those days are over. Every study, in these days, must justify itself. New subjects, with undoubted claims, have come in to contest the field; new ideas and aims, for national as well as individual education, have been put forward, some by those who really understand what education means more by those who do not; many popular cries have been raised to attract the public ear, and it behoves those who have given their lives to the work of education, and understand the processes by which human minds are developed, to point out what are in their opinion the true aims to be held in view, what are the fundamental conditions under which alone real progress and success can be secured, whatever may be the subjects to be included in our educational curriculum. It is not a question of subjects; it is far more a question of methods. Classical men know by experience what a splendid instrument for opening, expanding, stimulating and furnishing the young mind can be forged out of wisely-conducted classical study; but, as befits those engaged in the most liberalising of all pursuits, we bear an open mind towards all subjects of human study, and would exclude none of them, provided only they fulfil the fundamental conditions on which all genuine education depends. Under wise and thoughtful treatment, there is perhaps no subject of human knowledge which may not be made into an effective implement of education—no subject, however excellent, which may not be rendered useless for its purpose by dull, mechanical and lifeless treatment.

In my inaugural Address last year I endeavoured to point out that the main end of all education, however early it may have to end, is to evoke, develop, and strengthen the natural powers of the mind; to lead the scholar to realise what accurate knowledge means; how reasoning may lead him on from one truth to another; and thus send him out into the world in possession of his full powers, and with a wide mental outlook, fit to cope with whatever practical problems life itself may present. The success of Germany in education was shown to be the result of patient, continuous work in a few subjects, carried on over a series of years; the subjects taught are chosen mainly for educational, not for utilitarian, ends, not necessarily, often not at all, connected with the scholar's future calling; while again, in special schools, the utilitarian element is carefully laid on a foundation of general knowledge. But whatever the subjects be, whether ancient or modern or scientific, the essential point is that they are studied systematically from the foundation, as coherent branches of knowledge, with a view to create those right habits of study, those orderly methods of reasoning and observation, which are indispensable for every calling which has an intellectual element in it, and without which no man can turn to full account the opportunities which life itself may place within his reach.

In the case of America, we saw how, even in that practical country, the study of the classics is being advanced with prodigious rapidity: not merely for those who have academic aims in view, but for those who have the ordinary career of commerce or citizenship before them, and for whom it is felt that the best of all possible equipment that a man can possess for the varied purposes of practical life is to have a mind solidly and continuously trained in some of the fundamental branches of human knowledge.

The human studies, all admit, are indispensable for all. "The studies which deal with man," said Mr. Gladstone, in his Glasgow Rectorial Address of 1879—"studies in the largest sense of humanity, studies conversant with his nature, his works, his duties, and his destinies, are the highest of all studies. As the human form is the groundwork of the highest training in art, so those mental pursuits are the highest which have man, considered at large, as their object."

Granting these positions, and the corollary that the human or literary studies must lie at the root of all education, we cannot view without anxiety the fact that at the present moment, under the influence of various popular shibboleths, the essential elements of true education are in danger of being thrust on one side for supposed utilitarian ends, not one of which special ends can, in fact, be attained unless they be pursued from a foundation of general mental discipline.

Granted, then, that a general education is an indispensable foundation for every kind of specialised institution, what are the reasons which have given to the classics their supreme place in the educational field of the past, what are the grounds on which we believe to-day that their study affords, not certainly the only introduction, but the best introduction to the human studies as a whole, and supplies an admirable preparation for the work of life, not only if pursued to a high level, but even for boys whose school training may end at 14 or 15 years of age? The reason is a simple one: it is because these studies are eminently intellectual in themselves; because they call into play, from the very first, those mental processes by which habits of observation, thought, and reasoning, can gradually be formed, and because they introduce the young mind, by methods suitable for youth, to those large and simple conceptions upon which the whole fabric of human civilisation rests.

It is objected that the classical languages repel by their difficulty; that the learner is oppressed by a mass of dry, technical details, grammatical, and so forth; that the average boy never gets as far as the literature at all, forgets all he has learned of it as soon as learnt, and has no occasion to use his painfully-acquired knowledge in after-life. And it is suggested that in studies of less difficulty, more akin to modern life, acquisition would be easier and more pleasant, progress would be more rapid, while the pupil would carry away a larger body of knowledge, all of it useful in later life.

But I have no faith in the idea that everything in learning can be made easy and pleasant to the learner. The path to knowledge cannot be made an easy path. No mental mastery can ever be acquired except by downright hard effort, by accurate learning of hard lessons, by looking difficulties in the face, and by gradually discovering that the mind possesses within itself the means of overcoming them.

It is not good to burden the young mind with masses of facts; what is required is that the facts put before it should be important, should be large and luminous, should embody general principles, and be so connected with each other as to exemplify the mental processes on which all reasoning rests. The ideal study is that which combines, if one may put it so, the minimum of matter with the maximum of mind; and it is this special quality in the study of the classics which Lord Goschen had in view when he pronounced his celebrated dictum:

"You may take it from me that there are five times as many intellectual processes to undertake in translating from Latin and Greek into English, as there are in translating into English from any foreign language."

[1] Abridged from the presidential Address delivered by Prof. G. G. Ramsay, M.A., LL.D., Litt.D., at the annual meeting of the Scottish Classical Association, December 5th, 1903.

Now this does not mean that there is anything intrinsically difficult or abstruse in Latin and Greek: it means, on the contrary, that they present the problems of language in their most simple typical shape, exhibiting in their external forms the relations between thought and grammar, and refusing to allow the scholar to proceed one step until he has mastered the fundamental conceptions on which all language and all thought are based. In modern tongues these prime conceptions are overlaid and obscured by all the accretions, developments and amplifications which centuries of confused living and complex thinking have brought with them. Latin and Greek are the best first trainers in speech and reason, not because they are so hard, but because they are so simple; because they are concrete rather than abstract; because they are direct and not allusive; because they express at first hand, not at second hand, the great facts of human life, whether of the outer or of the inner world. Latin grammar alone—in its declensions, its conjugations, still more in its syntax—may be described as forming a systematised compendium of practical logic; every difference of form or construction corresponding to an essential difference of thought.

And as it is with language, so is it with all the elements of which human culture and civilisation are made up. Whether we look at the literature, or the philosophy, or the art; at the history, or the law, of ancient Greece and Rome, we find in all the same typical qualities. All is great, simple, and monumental; all is traced on large, luminous and comprehensive lines which can be grasped in their statuesque simplicity by the youthful mind, and through which he gains access, at their source, to the great ideas which have moved the world. Here, again, it is a case of the universal as against the particular, of the minimum of matter combined with the maximum of mind.

Take the literature by itself. From the first moment when the Latin scholar begins his first reading-book, his reading is all of gold. He is dealing with large and simple ideas, treated in the grand manner: though he can read but half a page in a day, he can read part of a masterpiece, from every line of which he may take lessons in the ordering of thought and words which a whole year's issue of the *Scotsman* or *Daily Telegraph* could never teach him. Within the compass of an ordinary school course, the classical boy may dip into, and have an appreciation of, some of the noblest things that have been said or thought on all the great problems of human life. It is because everything that he learns is excellent—because everything is suggestive and deals with fundamental facts, that are typical of similar facts all the world over—because everything appeals to, and draws out, his reason and forms his judgment, that the classically-trained youth carries with him into life an ordered mind which he can apply to every kind of situation, and will enable him to marshal and digest the facts, whatever they may be, which life itself will present to him.

What has been said is enough to supply an answer to questions often asked: "Why torment a boy with the technicalities of Latin grammar?" "Why not let him learn ancient literature through the medium of translations?" In other words, "Why not acquire mental habits without having to go through the mental acts by which alone the habits can be formed? Why go through the toil of reading a book, when you can read a review of it; or better still, get a friend to tell you what the reviewer says of it? Why condemn children to the misery of doing sums when they might find the answer to every possible arithmetical problem in a key?" Yes; "Why not start life fully educated without going through the toils and worries of education?" To the man already educated in other ways, who wishes to get some knowledge of ancient literature, grammar may be superfluous, good translations may tell much; but if the classics are to be used for purposes of education, to leave out the healthy wrestling with grammar and with dictionary is indeed to play "Hamlet" without the Prince of Denmark. I rejoiced much to find the following passage in the interesting volume of Lectures lately published by Prof. Hardie:

"Generalisations about the life and thought of a past age are mere empty phrases, unless we possess some direct acquaintance with that life and thought. Critical description of an author's merits and defects is one of the most useless forms of human knowledge, unless we can read the author ourselves, and feel that it is true. The key to the whole lies in the laborious mastery of details, in the first instance, in minutely accurate study of idioms and grammar."

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Prof. Ramsay further recommended that the teaching of grammar should be simplified at the beginning, all unnecessary details as to rare forms and exceptions, all precise rules as to genders and all delicate questions in syntax being omitted or deferred until such points actually occur in the reading.

THE EDUCATIONAL OUTLOOK.[1]

Mr. Balfour's Education Bill of 1902 has called into activity hundreds of bodies engaged with more or less energy and wisdom in effecting some of the reforms which we so long and so patiently advocated.

In some counties education committees strongly constituted and reinforced by able experts, are discharging wisely and liberally the duties imposed on them by the Act; while elsewhere, for lack of practical wisdom and organising power, there is a weltering muddle. There is great force in a suggestion made by your President last year, that the County and Borough Education Committees should establish a central council or committee similar to that of the County Councils Association. It would serve to diffuse sound principles and practical expedients for organisation, management, finance, and the immense complex of detail involved in the effective working of the Act. However, much has been accomplished in the last few years, and even though entry into the Promised Land is, as of old, chequered by disappointment and conflict, at any rate there is good reason to congratulate this Association which, in the weary years of waiting, largely helped to form public opinion and to win acceptance for broad principles of reform. For instance, we may express satisfaction at the successful issue of our efforts in behalf of the tripartite organisation of the Board of Education, in which effort a leading part was taken by one whose temporary absence from among us is deeply regretted. A very happy outcome of this recent organisation is the appointment of Mr. W. C. Fletcher as Senior Chief Inspector of Secondary Schools.

The influence of a single able and courageous official has been signally shown by the effect of Mr. Headlam's report on secondary schools. It supplied some of the material for a wise and powerful speech by Sir Wm. Anson in the last session of Parliament, in which he brought forward the evidences of the deplorable defects in the literary subjects of many secondary schools due in some measure to the misguided zeal and energy of the authorities of the late Science and Art Department.

But now we have good reason to hope for better things, and the influence of the Senior Inspector and his staff will be steadil

[1] Abridged from the presidential Address delivered at the annual meeti of the Incorporated Association of Headmasters by the Rev. Canon Be M.A., late Master of Marlborough College, on January 12th, 1904.

exerted to secure for secondary education many improvements still urgently needed. I will enumerate a few of them:

Our schools need freedom to give a well-balanced liberal education, without being cramped by unscientific time-tables, or bribed to sacrifice their pupils' true interests.

They need deliverance from the complex net-work of examinations, and from other defects of our examination system; we have to thank some of the universities, headed by Oxford and London, which are rendering, or about to render, help in different ways. There will be opportunities during our discussions of referring to some of these matters in detail, and in particular I hope our members will be present in strong force to consider the very important question of leaving certificates which will be brought before them by Mr. Fletcher as chairman of the Examinations Committee.

Thirdly, no efforts must be spared by those interested in education, by county and borough councils, by schoolmasters, by inspectors and all the authorities of the Board of Education, to urge upon the intelligence and the conscience of the nation the urgent need of increased grants from the Exchequer to the local education authorities for secondary schools, to enable them to do what is, or should be, demanded of them by the nation. The demands on them are growing rapidly.

Warnings have more than once been offered from this chair that the supply of assistant-masters has for some time been steadily dwindling both in number and quality. There may be several reasons for this decline, but none is more obvious or more scandalous than the lamentably low standard of the salaries of a large proportion of assistant-masters in secondary schools; and a startling assertion is made that in some schools the sum divisible for salaries is so inadequate that a rise in the number of pupils, due, presumably, to successful teaching and management, actually lessens the sum per head available for the salaries of the assistant-masters. Again, comparatively few schools are as yet able to establish a pension fund or other provision for masters when their strength fails them.

To one more question I must invite your attention. It occupies a prominent place in the melancholy but stimulating report of Mr. J. W. Headlam on "The teaching of literary subjects in some secondary schools" (Board of Education, No. 1738), but it does not occur in our programme for this meeting, and no reference is made to it in the report for the year. I refer to the pressing need of improvement in the teaching of our mother tongue. Complaints come from many quarters, including the universities and the army authorities, of the deplorable ignorance of English shown in examinations by candidates from our schools. Some members of the Mosely Commission consider that in many points we have little to learn from America, but this cannot be true in regard to the teaching of English, if we may judge from the thorough and scientific treatment of this subject in American manuals; and you are, no doubt, familiar with papers in Mr. Sadler's invaluable volumes of reports, which show the thoroughness in the teaching of the mother tongue in Germany and France.

Whereas Mr. Headlam says that the very first elements of good work are absent, and in a large number of schools the teaching has not yet reached that stage at which criticism begins to be useful or possible—English grammar is taught without any reference to the other language-work which the boys are doing—the rules are learnt from a text-book—but the boy gets no acquaintance with the English language as used by those who know how to use it, and has little skill or facility in expressing himself on paper or orally. Before our boys can be better taught, many schoolmasters will have to be converted from the heresy that English can be picked up anyhow without devoting time and care specially to it; and universities, and other training and examining bodies, must be urged to lend their help in providing adequate tests and supplying competent teachers of the mother tongue.

As we consider the manifold forces at work in the field of education, the action and reaction of conflicting influences, and the importance of the problems to be solved, it is plain that the coming year is destined to exert a momentous influence on the higher education of the country. Our experience in the past dictates to us our policy in the present and future. You know better than I the men who on your behalf have in past years taken the leading part in securing reform. Many of them are happily still among us, encouraged by success thus far achieved, and mindful that it has been in large measure the outcome of unwearied patience and persistence on the part of this Association, and of other bodies allied to it by their needs and their sympathies.

If they want a motto for the new year as they reckon up what remains to be done, they may think of President Lincoln's advice to keep on pegging away; or if they would prefer something more classical, let them take the words several times repeated in that unique commonplace book of Matthew Arnold, "*Labora et noli contristari.*"

THE ASSISTANT-MASTER AND THE FUTURE OF EDUCATION.[1]

IN the discussion of educational questions, the presence of those who have actual experience of educational work is absolutely essential. On that point I take my stand, for it is fundamental. The Education Act of 1902 states that the Local Education Committee shall contain persons "of experience in education," and the only persons who can properly be so described are not those who talk about education, who write about education, or who administer education, but the men and women whose whole life has been devoted to the hard task of real teaching. These are the true experts—*artis docendi non expertes sed experti*—and to exclude them from the settlement of educational questions is as much folly as it would be to exclude doctors from deliberations on the public health. No doubt the constitution of Consultative Committees composed chiefly of teachers is a healthy measure, and I have personally to acknowledge the generous treatment which, sitting as your nominee on one of them, I have received from the Chairman of the Surrey County Council, though he knows that on this point I am sharply opposed to him. But such committees are not enough, for all experience shows that, in order really to affect the deliberations of any public body, there must be direct representation on it, or, at least, power of direct access to it. It is not enough to be allowed to submit resolutions to it on paper. The right of immediate personal intervention is what is needed, and if consultative committees are to be of real service, the chairman and vice-chairman they elect should either *ex officio* be placed on the Education Committee itself, or at least be allowed to intervene in its debates, even if debarred from voting.

On this subject there is unity of opinion, and, what is far more, there has been unity of action, between ourselves and the Association of Headmasters. That Association has, indeed, during the past year deserved warm gratitude both from us and from all who wish well to education. Whereas the Headmasters' Conference, eminent equally for its exclusiveness and its incapacity, can point to no memorial of its long existence, to no

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1 Abridged from an Address delivered by Mr. T. E. Page, M.A., in moving the adoption of the Report at the annual meeting of the Incorporated Association of Assistant-masters, January 9th, 1904.

record of any real achievement—unless the recent editing of a school hymn-book may be accounted such—the Association of Headmasters has taken a step which, although very simple, seems to me to constitute the most important, because the most enlightened, movement which has taken place in secondary education within living memory. Knowing that the present conditions of tenure in schools are most unsatisfactory, and that this fact, by tending to diminish the already scant supply of good teachers, was a serious injury to the profession at large, while at times it caused cruel wrong to individuals, the headmasters took the only course which was consistent with sound reason and a just estimate of the duties of their position. They resolved that on a subject of common concern to the whole profession there should be—and it is of happiest augury for the future—common deliberation of all its members. They invited our representatives to meet theirs, and over the conference which took place Sir Edward Fry consented to preside. At the second meeting of the conference we were also honoured by the presence of Sir W. Anson and two of the permanent officials of the Board of Education. The resolutions arrived at by the conference will, perhaps, not command universal approval, for any arrangement which attempts to reconcile what may be conflicting interests can never give complete satisfaction to everyone, but they are none the less, I believe, of great value. For the first time it is definitely acknowledged that an assistant master ought to be, not the private servant of his chief, but the public servant of the authorities of the school. That acknowledgment is itself a fact of the first magnitude and of far-reaching possibilities. It places every assistant master in a new, higher, and worthier position, while, although its value is apparently much diminished by headmasters being, somewhat inconsistently, allowed to retain the right of dismissal, yet that right is transformed from an absolute and arbitrary right into one which is judicial and limited by the assertion that it is to be exercised not "at pleasure" but "at discretion," and the addition of a note explaining that the words "at discretion" are intended to give the authorities of the school opportunity, should they think fit, of inquiring how that discretion has been exercised. There is further added a right of appeal to the Board of Education, and the decision of the Board is to be final and effective. These resolutions are no doubt as yet only on paper. It will need much effort and earnestness to turn them into realities, but they are, even as they stand, a record of high value, which will take a place of its own among the archives of education, and gives, I think, to the headmasters to whom we owe them a claim to rank as benefactors of our profession.

On the question of salaries, which the conference had not time to consider, there is little to be said, because the subject admits of no dispute. In most schools they are totally and miserably inadequate, and, alike in their own interests and the interests of education, the members of this Association can never let the subject drop.

About superannuation something must be said. Doubtless various views are held on the subject: older men think differently about it from younger ones, and these in their turn will find their opinions insensibly modified by time; but beyond dispute any plan which curtails every man's professional life by some years does *pro tanto* render the profession less attractive because less remunerative. Superannuation, in fact, unless compensated for by pensions, must involve a clear loss. Whenever it is introduced, it must be in connection with a proper pension fund. But there is grave danger that by passing resolutions in favour of superannuation and pensions you may get the one without the other. Superannuation can be settled by a few strokes of the pen, but to provide pensions is a task of immense difficulty. Where are the funds to come from? They certainly do not exist at present, or could only be obtained by making heavy deductions from salaries already too small, while clearly, even any funds could be secured, the amount of such pensions mu suffer heavily if an early date is fixed for superannuation. In deed, when this question is considered as involving two factor its actual difficulty becomes extreme, and no steps should b taken without full public consideration, while, looking at th importance of the subject, it does seem that the Board c Education might rightly and wisely initiate an inquiry into it.

Speaking generally, the condition of education at the presen time affords much ground for hope and some for fear– for hope because of the increasing interest taken in the subject; for fear because of a certain want of sturdy common-sense in dealin with it. Books, essays, speeches, and articles on educatio abound, but a close grip of facts is rare. Yet all educationa problems resolve themselves ultimately into two clear ones— what to teach and how to get it taught. With regard to th first, unfortunately, there is complexity and confusion wher there ought to be order and simplicity. In old days the mental diet provided in schools was, doubtless, too monotonous. It recalled an old-fashioned dinner on a plain joint and pudding but it was often good, wholesome, and nutritive. Now the bil of fare in its pretentious variety reminds me of those *menu* exhibited at the doors of inferior restaurants where for half-a crown you can have a dinner of half-a-dozen courses, and depa either famished or unwell. Fresh subjects of study are pe petually forced upon us by those who forget that a boy's brain not, like his digestion, capable of all things. What, indee ought in each case to be the range of study cannot, since con tions vary infinitely, be stated with exactitude, but limitation such range is essential to all solid and permanent work. A human beings have the faculties of observation, reason, an speech, so sound education must combine some study of scienc mathematics, and literature. But whatever is taught in each them must be thorough. In mathematics, indeed, there is litt temptation to be superficial, but in scientific and literary trainin there is a natural tendency to a vague discursiveness which i fatal to the acquisition of real power.

And now, lastly, as to the question of how to get what i required properly taught. This is the real and central problem (for no scheme of work badly carried out is worth anything), and the key is to be found only in the character and capacity of those who do the work of teaching. This obvious truth is, however, not unfrequently ignored. Of professors who never stoop to performance, of experts without experience, of administrators who have never been apprentices—of such men we hear much, but of the simple actual teachers we hear little. Teaching is often regarded as a mechanic art in which it is only necessary to provide good workshops, new machinery, and skilled superintendence in order to attain any desired results. It is supposed that boys, delivered, like raw material, into such a manufactory, can be turned out at so much a head complete and finished articles.

Organisation and machinery are, indeed, not without their use, but, in dealing with a thing so delicate and complex as the human mind, there is need also of something subtler and more spiritual. *Mentis agitatar meæ* are the three striking words in which the poet Ausonius addresses his old teacher, and they are an epitome of truth. It is in the power of the individual teacher to stir, to rouse, to spur the mind of his pupil, that the essence of teaching consists. Organise education as much as you please schedule and certificate teachers as you like, pile up Blue-books to Olympus, and unless you get the men you need, men of real capacity and even inspiration, all will be a failure. The whole fabric of education rests finally on the work of the teacher, and if that work is to be well done by able men, there must be three things—better pay, happier terms of tenure, and wise encouragement of merit. Teaching is at best a hard, exhausting, an

often wearisome task, but when, in addition, the teacher's pay is poor, his position precarious, and his best prospects often an age of poverty, how can you expect from him that glow and fire of enthusiasm for learning which can alone kindle in others a like Promethean spark? Unhappily, ever since the days of Juvenal, schoolmasters have been regarded as articles to be bought cheap, and to be treated at best with toleration and often with contempt. Yet, assuredly, in any wise community our work would be held in high honour, for it is an attempt to perform one of the most necessary and hardest of all tasks—an attempt, however feeble, to prepare for noblest uses that wonderful instrument, the human mind. But, in spite of all, the schoolmaster's life has in itself, if well lived, its own sufficient reward. Tedious it may be and obscure, but to faithful labourers there comes at times some faint sense that they have done something to make some opening lives truer, stronger, and better—some faint hope that, when at last the hands are folded, there may be spoken for them the great sentence of the Great Master—"Inasmuch as ye did it unto the least of one of these my brethren, ye did it unto me."

EXCURSIONS AND THE TEACHING OF GEOGRAPHY.[1]

By J. LOMAS, A.R.C. Sc.(Lond.).

PERHAPS I can best introduce the subject of excursions by describing one which I have more than once conducted both with children and adults. It is along the course of an ordinary stream such as can be met with in any part of the country. In the summer-time it is little more than a ditch filled with reeds and coarse grasses, and only after heavy rains does it appear as a respectable stream. I hope to mark some of the salient points and the places where we linger to solve problems.

Not far from its source is a miniature waterfall. Our first enquiry is why a waterfall should exist at this place. A little hammering soon brings to light a bed of rock harder than the rest; we note the undercutting and recession of the fall, and the swirl of stones in the bed gives the clue to the potholes in the stream bed. The course of the stream is fairly straight when traversing the rocky bed, and below, when there is rock on one side and loose material on the other, it still keeps to the rock, and only swerves where an obstacle comes in its path. Further downstream, where it flows wholly through soft material, the valley widens and the stream begins a series of meanders.

At one of the bends we pause to make experiments. The lines of maximum flow are found by means of sawdust thrown in the water. We see the outer curve is steep and is being eroded, while in the inner bend a tongue of sand shows that deposition is taking place. Why should the sand be laid down here? Is it a result of the movement of the surface or bottom water? By introducing coloured liquids by means of a tube we find that the lines of flow at the bottom are from the outer bend to the inner. Continual waste of the outer bend causes a sharpening of the curve. Lower still the stream runs almost straight, and swampy oxbows alternating at the sides tell of the straightening process in times gone by. The stream once more begins to swing through swampy meadows, and then we come to a straight course. All along, oaks, alders, and other trees have fringed the banks, but here they cease, only to be resumed lower down where the swings once more begin. We notice the trees cut across a field towards the railway, and are continued on the other side in a large curve, and a tributary joins naturally on the outside of the bend. Other observations lead us to the belief that the straight course is artificial, but has no connection with the making of the railway.

Thus we follow the stream step by step, observing, seeking problems and solving them until it is lost in the larger Mersey. We have thus in the course of a Saturday afternoon seen and learnt something of the life, the physiology, of a simple stream.

When a pupil has observed, he should be allowed to make or study maps, which are the conventional representations of what he has seen. Even if he takes in hand foreign maps, the signs and conventions will recall to him the features of river, lake, mountain, coast, and other scenes about which he has information at first hand; he will read into them some real knowledge, and they will live in his mind.

Now it may be profitable to describe the methods to be adopted and the pitfalls to be avoided in conducting excursions. The true function of a leader is to present problems to be solved on the spot. With a definite object in view we *see* more, and, in balancing evidence for or against a proposition, new observations are made and keener interest is aroused. Avoid giving names. If the pupils insist on having names for convenience, get them to invent such as they think suitable. In all cases go for the thing and its properties, and label afterwards.

A pocket blackboard is a useful adjunct in the field. One can easily be made by attaching a few sheets of brown paper by means of paper fasteners to a piece of millboard made to fold vertically. When one sheet has been filled it is easy to tear it off, and a clean surface is left for further use. Lithographed slips placed in the hands of the pupils at the beginning of an excursion, showing what is to be observed, are not to be commended. No information should be given which tends to hinder personal investigation. The attitude of the leader should be that of a fellow-observer.

It is well not to attempt too much at a time. Almost any excursion will bear repetition, and the whole of the lessons will never be exhausted. If excursions cannot be made to fit in with the time-table of a school, spare hours can be utilised, provided the teacher is willing to sacrifice some of his leisure for the benefit of the pupils.

Unless we are totally indifferent as to the results of our labours as teachers, we must strive by all our powers that the pupil receives *correct impressions*. We cannot stand aloof and think it of no consequence whether our labours have struck home or not. A good teacher can penetrate the thoughts of his pupils, and there read the picture impressed. This can be done by getting the pupil to *express* by word or drawing what he has assimilated.

But how are we to make our teaching real and secure that the pupil receives correct impressions? There is only one way, and that is by *observation*. *Seeing* must always go before *knowing*. Knowledge thus gained is of infinitely greater value than that merely given on the authority of a teacher. Applying this to the teaching of geography, the pupil should be placed in a position to observe the world about him, its life and activities, and, if definitions are necessary, he should make them for himself.

[1] Abridged from a Paper read at the annual conference of teachers arranged by the London Technical Education Board and held at the Chelsea Polytechnic on January 7th, 1904.

EIGHT of the senior students, whose course at Datchelor Training College came to an end at Christmas last, took the Cambridge Teaching Diploma examination in December, and all were successful. In practical efficiency three first classes were obtained, and five seconds. Two students also took the London Teaching Diploma examinations and both succeeded. One of the junior students took the London B.A. examination and has gained a First Class.

THE TRAINING OF PUPIL TEACHERS.

The Board of Education issued at the end of 1903 a circular to Local Education Authorities and others on the subject of the supply and education of pupil teachers. With the circular was enclosed a number of hints on the organisation of the instruction of pupil teachers. The following extracts from these documents will prove of interest. The circular signed by the Secretary to the Board states :—

"In March last the Board of Education appointed a small temporary committee of investigation into the education and training of pupil teachers. The suggestions of that committee have already been to a large extent incorporated in the new Regulations for the instruction and training of pupil teachers issued by the Board. There is, however, within the limits of those regulations, much room for variety of organisation and for experiments by local education authorities and others in the direction of establishing a new and improved pupil-teacher system. . . . The problem to be solved in each locality will be determined by so many special conditions, and in particular by the number and the character of the existing secondary schools, that the preliminary steps to be taken in each case must be left to those who possess the necessary local knowledge. It would probably be, as a rule, desirable that the local education authorities for higher and for elementary education should join in calling a conference of those interested in the question, in order to consider what facilities already exist for the instruction of pupil teachers, and what should be done to supplement these. The Board of Education are taking steps to collect information as to the very varied experiments now being made in connection with the training of teachers. They will be glad at any time to instruct one of their officers to confer at Whitehall with Education Secretaries or others engaged upon the work, and to give any advice and information available."

The following extracts from the pamphlet accompanying the circular serve to show that a serious attempt is to be made to link together, in one direction at least, primary and secondary education :—

Continued Need for a Pupil-Teacher System.

It is clear that pupil teachers not only must, but should, continue to be an important part of the educational system of the country. There is already a deficiency in the supply of certificated teachers, and, in view of the inevitable increase of expenditure upon many schools which have hitherto been inadequately staffed, this deficiency will not tend, at any rate for the present, to diminish. It follows that, although every effort should be made to find recruits for the teaching profession in other ways, it would by no means be the course of practical wisdom, at the present moment, to destroy the system which, however inadequate, is the only assured source of supply. Even were this not so, it is probably true that the practical experience due to employment at an early age in elementary schools forms a valuable element, not otherwise easily attainable, in the training of a teacher.

Use of Secondary Schools.

On the other hand, it is equally important at the present moment that fresh blood should be introduced into the pupil-teacher system by the drawing of candidates from secondary schools and by the utilisation of secondary schools to the fullest extent possible for the purposes of their training. It is to be hoped not only that a fresh source of supply may in this way be tapped, but also that the result may be to bring the pupil teachers under the influence of a wider outlook and a more humane ideal of education than have been possible under the difficult conditions generally prevalent in the past. where, merely as to instruction, a secondary school prese great advantage over a higher elementary school or a spec pupil-teacher centre, there will be a social gain if cand are drawn from homes of more than one class and if som is thus done to break down the existing and undesirable l between elementary and secondary-school teachers.

The Pupil Teacher Centre may be merely fed from secc schools, instead of from preparatory classes of its own, w being in any organic connection with such schools. Sc the best existing centres already draw largely upon the dary schools for candidates. This is the case, for instar Bristol, where intending pupil teachers have received sc ships at the School of Science, and where 78 out of 165 teachers have had this origin. Similarly, at Stockton-on 50 out of 70 pupil teachers at the centre have come f secondary school ; and the experience of Cardiff, Lincol Nottingham also goes to show that pupil teachers are easily obtained and are better educated to start with wher secondary or higher elementary schools exist ; while, c other hand, Darlington, Preston, and Blackpool are exa of places where well organised pupil-teacher centre hampered by the want of secondary schools as feeders.

The secondary character of a centre is, however, strengt when its candidates are not only drafted in from secc schools, but also continue during their career as pupil te to form, in some sense, part of such a school. This meth organisation is still in its experimental stage ; but many newly established County Schools in North Wales are available for pupil teachers, while in England a similar made of the Cheltenham, Cirencester, and Spalding Gra Schools, and of the High School at Keswick. In Wiltshi buildings at least of secondary schools are utilised fc instruction of pupil teachers, who are brought into the towns from the rural area. The fact that pupil teache only attend half-time naturally leads to the organisation of work as a distinct half-time department of a school, in instruction is given apart from that of the ordinary sch Hereby something of the advantage, social and intellect their position is inevitably lost, and it has been suggeste it might be possible so to arrange the time-table as to p that the pupil teachers should receive class instruction wi rest of the school in the mornings, and that the other sc should take subjects, such as music and the like, which entail class instruction, in the afternoons. The experime been tried at Barry, near Cardiff, where the pupil te attend in the morning and share instruction with the scho the Intermediate School, and to some extent at Scarbo where the pupil teachers are taught during one year o engagement with the rest of the secondary school, while next year they are organised as a distinct class. But it very doubtful whether the advantage of any such system pupil teachers can compensate for the disorganisation nece caused in the rest of the school, and the half-time depar should probably be the normal arrangement. This wi enable the pupil teachers to obtain very many of the adva of the corporate life of the secondary school.

The advantage of their position in a secondary schoo more seriously diminished when the pupil teachers not o not share instruction with the other scholars, but are also to join in the games and the ordinary social life of the s This is the case in Wiltshire, where most of the pupil te have to be conveyed a considerable distance to school, an in North Wales, where the fact that the pupil teachers ha mid-week half-holiday interferes with their joining fu games. Every effort should be made to overcome this back ; and the half-holiday in the middle of the week, s

as the regular Saturday half-holiday, will be of great importance on this as well as on other more obvious grounds. There are naturally other difficulties in the way of the instruction of pupil teachers in secondary schools besides that of organisation. There is the "class" problem to be faced. It is probable that the tradition and habit of social differentiation would make it difficult (at all events for some time to come) to draft pupil teachers to any large extent into many schools of the old grammar-school type, and it is understood that the teachers of these, as well as of some schools of the modern high-school type, join with the parents of their existing scholars in deprecating the possible changes in the character of the schools, both social and intellectual, which might result. But it may be hoped that the difficulty will tend to disappear as the number of pupil teachers who have already had their preliminary education in secondary schools increases. Again, in many places the supply of secondary schools is inadequate, and in order to provide effectively for pupil teachers it would be necessary to establish additional schools, as has been done so largely in Wales. The curriculum of some of the existing secondary schools is also either on the one hand too scientific, or, on the other hand, too classical to be suitable for pupil teachers, and there is a certain prejudice which would need to be overcome amongst the head teachers of elementary schools against assistants who have been educated in secondary schools—a prejudice which fortunately is not infrequently removed when such head teachers and assistants have worked together for a sufficient length of time.

OTHER CONSIDERATIONS.

Where a secondary school is not available for the training of pupil teachers throughout their engagement, the pupil-teacher centre must necessarily have an independent existence.

Where a centre is not able to draw its supply of candidates from secondary schools, preparatory classes, "attached" to the centre itself, may serve to fill the gap.

It is desirable that, where possible, a pupil-teacher centre should not only be in touch with the various forms of education received by pupils up to the age of 16, but also with those forms of higher education which may in time be available for the pupil teachers at a later stage in their career. At the Reading College, and at the Hartley College, Southampton, which are university colleges and also day-training colleges, centres have been started where the instruction is mainly given by the University staffs, and this is an experiment which might well be attempted in other places. It may be added that university extension lectures have in some cases been of great benefit to pupil teachers.

The shortened time which is at the disposal of pupil teachers for the purposes of education, owing to their employment in elementary schools, is found to lead in practice to several defects from a strictly educational point of view. The instruction is too often subordinated to the imminent examination. Lecturing and dictation are too apt to take the place of private reading and independent study. Time is thought to be saved by the use of over-annotated text books, with the inevitable result of cram in place of mental discipline. Physical training, again, is, even in some good centres, almost entirely neglected, and the little time for recreation available for pupil teachers is not only injurious both physically and mentally, but also operates as a real cause in deterring promising boys and girls from entering upon the profession. It is strongly to be urged that arrangements should be made between the managers of schools and the authorities of centres to allow in every case at least one half-holiday in the week, in addition to the half or the whole of Saturday. It has already been pointed out that this is particularly important where pupil teachers are to join in the corporate life of a secondary school.

THE GEOGRAPHICAL EXHIBITION AT CHELSEA.

THE large gymnasium of the Chelsea Polytechnic appeared almost covered with maps: lantern slides and models were also conspicuous. In an adjoining room the desks were covered with books, and a collection of globes caught the eye at once.

The finest of the wall maps was a large German Empire in high relief, no varnish and no names interfering with the general effect. A coloured contour map of the South of England by Bartholomew on ½-inch scale was also the more effective by being left unvarnished and without names. The Indian Survey was represented by a fine series of maps, including large wall maps showing the distribution of cotton and other products. The same information in a more condensed form was given in the "Statistical Atlas of India." The Intelligence Division of the War Office was represented by a sheet from South Abyssinia up to the borders of Lake Rudolf. Among specimens of Survey maps were the Oxford, Kinderscout, Chichester and Bangor sheets. The Geological Survey is now appearing in a new colour-printed edition, cheaper than the old hand-painted maps. Haileybury and Dover College are already taking advantage of the offer of cheap maps for educational purposes. The Swiss sheet, "Evolena-Zermatt-Monte Rosa," is shown in the new "ton-relief" edition, in which tones of colour conspire with the older methods of mapping to bring out a very remarkable effect of relief.

Among physical maps we notice the Botanical Survey of parts of Scotland and of Yorkshire, by Messrs. Smith and Rankin, published by Bartholomew; the Bathymetrical Survey of the Scottish lakes, by Sir John Murray, published by the Royal Geographical Society; and some new maps by the Board of Agriculture showing the distribution of wheat, sheep and cattle. The Meteorological Office shows specimens of the Monthly Pilot Chart of the Atlantic, issued at sixpence; and from Hamburg come the "Deutsche Seewarte" charts of the Atlantic Ocean. The '*Challenger*' Survey shows the temperature and pressure charts of the world, the origin of those now in the "Atlas of Meteorology." What a good thing it would be if all atlases would state the origin and the authority of the maps used. The "Atlas International des Nuages," with its beautifully tinted plates, shows the accepted definitions of cirro-cumulus and other cloud forms.

Prof. W. W. Watts sends a selection of the British Association geological photographs to illustrate glaciation in Britain. These are now obtainable by subscribers to the complete series. Mr. H. C. Lowe, photographer, of 205, High Street, Smethwick, shows lantern slides from the British Association series, for which we have long been waiting. The Diagram Series of lantern slides are well worth attention, particularly those of mountain scenery and the influence of geography on history. These are obtainable from the Diagram Company, 27, Victoria Road, Clapham Common, S.W. The designs are by Mr. B. B. Dickinson, of Rugby School, and Mr. A. W. Andrews, Oxford and London University Extension Lecturer.

Of models some of the finest are those of Ingleboro' contributed by Prof. Kendall, of Yorkshire College, and the high relief models of the Alps. Prof. Kendall also shows his maps of the now celebrated Lake Pickering.

Of books, we may notice some American physiography books, well illustrated; those by Prof. W. M. Davis, imported by Messrs. Ginn and Co.; those by Prof. R. S. Tarr, brought over by Messrs. Macmillan. The three-colour printing process promises to invade the field of elementary education, as may be seen by the coloured pictures in "Over Land and Sea," and the World Wide Geography Series published by Messrs.

Collins. Evidently the text book of the future must contain good text and good coloured pictures.

Those who are trying to make use of Ordnance Maps will be interested in the "Topographic Atlas of the United States, Physiographic Types," Folios 1 and 2, published by the U.S. Geological Survey. Visions are already rising of a similar atlas containing specimens of English ordnance maps, geological and botanical survey maps, admiralty and military maps. But before we can use this we must solve the problem now before us—how to get intelligent work out of our pupils with the 1-inch maps now at our disposal.

A stereoscope will allow teachers to judge for themselves of the value of this method of instruction. Of globes, perhaps the most useful is that with a clean blackboard surface. The plane table will show how to rig up a serviceable model with camera legs and a drawing board. Its rigidity should be tested by real work. Various French books and German Atlases deserve more attention than they are likely to receive. Those who think that class-room walls should be adorned with pictures rather than with maps will welcome the very striking Himalayan views lent by Mr. Douglas W. Freshfield, the president of the Geographical Association. This is a department of the exhibition deserving of fuller development.

The full "Catalogue of the Geographical Exhibition" is published as a Supplement to the *Geographical Teacher*. It may be obtained from Messrs. Geo. Philip and Son, price 6d., and will be found of permanent value as a guide to maps, books, publishers and prices. H. R.

THE JANUARY EDUCATIONAL CONFERENCES.

IF it is permissible to estimate the amount of the interest in education throughout the country by the number of conferences of teachers and others held from time to time to discuss educational problems, it is quite clear that there is every cause for satisfaction. In recent years the increase in the number of annual meetings of educational associations held during January has been very marked. In place, too, of administrative matters and questions of professional status and etiquette, which were the chief subjects brought forward a few years ago, discussions on methods of teaching and other aspects of the practice of education which form the everyday work of schoolmasters and schoolmistresses occupied by far the greatest prominence in the meetings of last month. This is as it should be. The important matter from a national point of view is to ensure a rational and suitable education for every child, and teachers are most likely to find how to work satisfactorily by taking every opportunity of discussing and comparing notes with colleagues of varying experience gained under different conditions. When it is recognised that teaching ability requires both a knowledge of educational principles and practical experience, and only qualified teachers can enter the profession, it will not, we hope, be long before anxiety as to salary and tenure ceases to exist.

With the space available it is impossible to provide a detailed account of the proceedings at twelve or thirteen conferences; all that we can attempt is to give a general idea from the point of view of the practical teacher of the subjects discussed at the various meetings; and with this aim the most convenient plan will be to classify the subjects considered and to refer to individual conferences under these headings.

THE TRAINING AND SUPPLY OF TEACHERS.

The reorganisation of many primary schools and the establishment of new secondary schools as a result of the Education Acts of 1902 and 1903, the establishment of the Teachers' Register and other causes, have brought into prominence the need for a greater supply of teachers and a more adequate training for them. These questions have occupied the attention of several of the conferences. At the North of England Conference in Leeds the training of teachers was considered in a meeting of some nine hundred persons, and the same subject was taken up at the annual meeting of the Incorporated Association of Assistant-masters at the Mercers' School, London. At Leeds Prof. J. J. Findlay, of Owens College; Mr. A. C. Price, of Leeds Grammar School, and Mr. A. J. Arnold, of the Sheffield Pupil Teachers' Centre, all read papers in which the subject was treated from different points of view. Prof. John Adams, of London University, read a paper to the Assistant-masters Association on theory and experience in teaching, and Mr. W. P. Walsh opened a discussion on the new regulations for the training of pupil teachers, which are printed in an abridged form in another part of this issue. These regulations were also brought before the meeting of the Headmasters' Association on January 12th, and the following resolutions were adopted: "That this association welcomes the provisions in the new regulations by which candidates for pupil teacher-ships in elementary schools are recommended to receive some part of their education in secondary schools." "That this association is cordially in sympathy with the recommendations laid down in Mr. Morant's memorandum, and is of opinion that intending pupil-teachers should enter a secondary school at about 12 years of age, remain there for four years as an ordinary scholar, and then receive a two years' additional course as a pupil teacher under special instruction and partial or continuous attendance." The supply of teachers as it is affected by a variety of causes engaged the attention of the Teachers' Guild at their conference in the City of London School. Mr. Yoxall, M.P., of the National Union of Teachers, showed how the supply of teachers is affected by registration conditions; Dr. W. H. D. Rouse, of the Perse School, Cambridge, considered how the supply is influenced by the present conditions of tenure, and Miss L. Falthfull traced the effect of the current rate of renumeration.

THE CO-ORDINATION OF SCHOOLS.

Now that schools of all grades have been placed under the control of one education authority for each local area, it is of the first importance that agreement should be arrived at by teachers in primary and secondary schools as to what exactly should be the relation of the work of the primary school and that of the secondary school, and how both should be related to technical schools and places of higher education. Many aspects of the work of co-ordinating schools were presented by experienced educationists at a joint conference held at the City of London School on January 11th. The associations participating in the joint conference were: The Assistant-masters' Association; the Association of Assistant-mistresses; the Association of Headmasters; the Association of Head-mistresses; the Association of Head-masters of Preparatory Schools; the College of Preceptors; the Headmasters' Conference; the National Union of Teachers; the Private Schools Association Incorporated, and the Teachers' Guild. The meeting was presided over by the Rt. Hon. A. H. Dyke Acland. Mr. T. D. Headlam, Inspector of Secondary Schools to the Board of Education, introduced the question of the age at which it is desirable that transition from primary to secondary schools and from one type of secondary school to another should be made, and arrived at the conclusion that if the secondary schools were to be efficent, boys must enter at not later than ten years of age, and in a speech which followed Mrs. Bryant agreed to the same age for girls. In summarising the discussion Mr. Acland thought it had shown that they could

not lay down any definite solution; but with reference to the length of time, they ought to have some power, if possible, to keep the children for at least four years, and he urged that where possible parents should be compelled to leave their children at school.

The next subject was the extent to which the curriculum in one type of school should be correlated with that in other types, and Mrs. Bryant, who opened the discussion, said that between the ages of 8 and 12, the period of elementary education, a good deal more should be done. She thought that the elementary school child should not be backward in anything but classics on entering the secondary school.

Prof. J. W. Adamson, of King's College, London, opened a discussion on the best method of discovering the child of scholarship form at the appropriate age for transition from primary to secondary schools. He said that the problem was the discovery at the immature age of 11 or 12 of those finer brains in the public elementary school whose natural capacity it was to the interest of the community to cultivate by a prolonged schooling. The present examination scheme would be more effective if it were less cut and dried and if it included a liberal provision for *viva voce* work. The examiners ought to have full discretion, their purpose being, first, the discovery of faculty, and secondly, the possession of the *minimum* knowledge necessary to pass to the higher school. The best method of adjusting the elementary pupil-teacher system to secondary schools was the next discussion, which was opened by Prof. John Adams.

The general question of the co-ordination of schools also engaged the attention of the North of England Conference at their second general meeting, when Prof. Sadler presided. The discussion was opened by papers from Mr. H. Coward, President of the National Union of Teachers; the Rev. W. H. Keeling, of Bradford Grammar School; and Dr. Forsyth, of the Leeds Higher Grade School. In opening the meeting Dr. Sadler said the problem of the coördination of schools was how best to construct great lines of through communication from one end to the other of our national education, so as to avoid any break of gauge, or gaps in connection, which might unnecessarily hamper the quick passage of promising pupils from one stage to another of intellectual and social opportunity. But this project of educational engineering was subject to a number of limiting conditions. It needed to be so contrived as to furnish alternative courses of study fitted to different types of intellectual tastes and of practical aptitude. It needed in every case a sound intellectual foundation for the later courses of study. Superficiality was dear at any price, and especially in educational foundations. Next their plan should make thrifty and considerate use of existing materials. It should preserve, so far as might be, whatever was of decided excellence in the older educational traditions. It should not be designed as to give any colour or support to the superstition that mere examination results, taken by themselves, were a real measure of educational value or progress. And, next, their plan should steadily aim not at multiplying more recruits for the more literary points (as if the production of literary men in different ways was still the sole aim of education), but at spreading throughout the whole community liking and honour for every kind of thorough workmanship, and fitting every boy and girl, according to their aptitude, for the responsibilities of modern citizenship, and for the practical tasks of life as they would have to lead it.

At the annual meeting of the Assistant-mistresses' Association, Miss Lewis read a paper on specialisation. She thought that it was better for a child to leave school with a fair grasp of one or two subjects than with an elementary knowledge of many; but they should set their faces against specialisation at an early age. If the number of subjects in the curriculum was reduced, the necessity for specialisation would be less pressing.

The Teaching of Modern Languages.

The teaching of modern languages formed the subject of four papers which were read and discussed during the morning and afternoon of January 8th at the annual conference arranged by the London Technical Education Board, and held at the Chelsea Polytechnic, and of two papers at one of the sectional meetings at Leeds. At Chelsea, Dr. Edwards, of the London University, dealt with the application of phonetics to language-teaching; Mr. F. B. Kirkman explained numerous methods of using a French reader; Mr. G. Coulton delivered an address on grammar-teaching in modern languages; and Prof. Rippmann discussed modern-language examinations. At Leeds, Mrs. Miall spoke on the application of Pestalozzian principles to the teaching of languages; and Mr. F. Storr insisted that in each school or department of a school there should be one man responsible for the modern-language teaching. What teachers of modern languages might fairly claim was—to be consulted as to the distribution of work, to be allowed to draw up a scheme of work, and to have authority delegated and time and opportunity to see that their scheme was carried out.

The Hon. W. N. Bruce, Assistant Secretary to the Board of Education, presided at the morning sitting of the Chelsea conference, and in his opening address dealt with the difficulties to be encountered in improving the teaching of modern languages in English schools. The most striking feature of the reform of modern-language teaching was that it came straight from abroad. The improved system of teaching a foreign language came to us from Germany, not simply in idea and theory, but as a full-blown system, with method and apparatus all complete. There was some advantage in that circumstance, but it brought with it its own difficulties. The idea and underlying principle were true for all nations; but there must be something in the methods and the people who had invented them and brought them here wholesale which was attended by inconveniences. Then there was the difficulty intrinsic to the subject—the adaptation of the new method to scholars of different grades and ages; there was the co-ordination of modern languages in the curriculum with Latin, and there was the difficulty of the time to be given to modern languages to secure reasonable results in the student's career. There were difficulties, too, peculiar to the teachers of modern languages, and it struck him that, where the new method was thoroughly carried out, it imposed a very severe strain on the teacher.

The Teaching of Classics.

Prof. G. G. Ramsay, of Glasgow University, and Dr. W. H. D. Rouse both read papers on the teaching of classics at the Leeds meeting, and the same subject was given considerable attention at the Teachers' Guild conference, where Canon Lyttleton introduced the question, "At what age should Latin be begun, and to what class of scholars should it be taught?"

Prof. Ramsay, in his address, did not give any exclusive position to the classics, holding rather that in all true educational work method was more important than matter. He held that nothing was so mischievous as the crowding together into one curriculum of a multiplicity of subjects, to be half taught by cheap and easy methods. Subjects like book-keeping and shorthand were nowadays substituted for solid subjects of instruction. In England, the idea that classical teaching might form a part of popular education in higher-grade schools or otherwise, as well as in grammar-schools proper, would be met with some scepticism. The cry for the so-called useful was, said Prof. Ramsay, leading public bodies to scatter broadcast the smatterings of science to all and sundry, without any con-

sideration whether the minds thus treated were prepared to understand and take in the methods of science. The ideal study for the young was that which combined the minimum of matter with the maximum of mind.

ART TEACHING.

The morning of the last of the three days of the Chelsea conference was devoted to a discussion of two papers on different branches of art instruction. Mr. W. Egerton Hine, of Harrow School, read a paper on art-teaching in secondary schools, and Mr. Noel Lydon dealt with the same subject chiefly from the point of view of the school. Sir Charles Holroyd, Keeper of the National Gallery of British Art, Millbank, took the chair at this meeting, and delivered an address on the teaching of drawing. He said the early training of a man who wished only to draw a little was the same as that of an artist, there was only a difference in degree; the alphabet and grammar must be taught to all, and it was the fault of teachers that the elementary teaching was not better defined. It was for such a conference, through comparison of experiences, to provide a "horn book" of art, a system of elementary training for eye, hand, and brain. The latter was most important, but a beginning must be made with the eye, and the pupil must be taught to see rightly. Almost any object might be used; but, with consideration for the training of hand and head, let the object be beautiful in itself, for the taste of pupils was susceptible at an early age, and drawn with a firm, clear line, the end in view being the making of a draughtsman, not a drawing. Corrections would follow later. In landscape, as in figures, a good firm line was all-important. In the choice of subjects the preference of the pupil should be humoured as far as possible, for the interest must be sustained. Where possible, drawings from the old masters should be copied, selection being made of drawings simple in outline and with little detail.

Mr. Hine described in detail the course pursued at Harrow School, showing how, even under present limitations, it was possible to develop latent powers of drawing. The relation of drawing to art was as that of grammar to literature, and no amount of drawing in a technical school could make an artist; but in the early training the roads ran parallel, and every lesson in drawing might be a lesson in art, developing power of observation and bringing out the gift of expressing individual feeling.

Mr. Lydon thought that the broad lines of the art syllabus should be framed to give encouragement to the exercise of imagination; a too definite line of cleavage between imitative and original work should not be insisted upon; the genius of design should be implanted at the outset and developed by imitative drawing. He illustrated the principles laid down by a description of the course of progressive study followed with 450 boys in Owen's School, Islington.

At Leeds, Mr. A. Spencer, of the Royal College of Art, London, spoke on the general subject of art-teaching. He complained strongly of the want of co-ordination at present prevailing in the teaching of art. Elementary art-teaching should, he said, commence in the infants' schools. It might appear absurd to speak of teaching drawing to children from three and a-half to six years of age. But the drawing-slate and the paint-box were the most popular toys of the child. Children could not attain much executive skill at that age, but other subjects could be made more interesting by taking drawing in correlation with them. Once the child was interested, the teaching was easy. Flowers, foliage, and natural and common objects, selected for their beauty, might be placed before the young children, the scope of the subjects being extended as the higher standards were reached. The object of the teaching throughout should be to train the powers of observation, the *executive* power of delineation, and the memory. Mr. Spencer went on to condemn strongly the use of flat copies. He had never been able to see the educational value of outline drawing, or of the meaningless designs which children were set to copy.

THE TEACHING OF GEOGRAPHY.

The first day's meeting of the Chelsea conference was arranged by the London Technical Education Board and the Geographical Association. Mr. H. J. Mackinder, Reader in Geography in the University of Oxford, gave an address on the development of geographical teaching out of nature-study. He said that geography, rightly understood, was a matter of imagination. He assigned to geography a sixth place in the general scheme of education, not a sixth of the time, because drill disciplines must occupy a greater part of the time. Geography should be taught by expanding powers of observation; it should not consist of a mere knowledge of names with the assistance of a map half understood. The expansion of nature knowledge into the foundation of the study of geography was incompatible with the early use of maps. He defined geography as answering the questions Where? and Why there? In developing the teaching of geography from nature-study there should be a slight power of drawing a plan and of modelling such as most children possessed. The romantic side of the child's mind should be appealed to, and natural facts as described by explorers should be put before him and contrasted with the things around him. But this teaching should proceed without the use of maps, for he would abolish all maps from junior schools. At first the teacher should use a blackened ball, upon which gradually continents, with their names, should be marked in white, and not until the pupil had learned the approximate position of different countries on the earth's surface should a complete map be shown. The British Empire should not be studied alone, but in its relation to the world as a whole.

Papers were read by Prof. P. F. Kendall, of the Yorkshire College, Leeds, on the making and use of geographical models; by Mr. J. Lomas, on excursions and the teaching of geography; by Dr. A. J. Herbertson, on Ordnance Survey maps illustrative of typical regions; and by Mr. T. Alford Smith on the practical use of the globe.

THE TEACHING OF ENGLISH.

One of the sectional meetings of the Leeds conference was occupied with the teaching of English. Canon Lyttelton, Headmaster of Haileybury College, was the chief speaker, and in a particularly interesting address referred to many matters connected with teaching the mother tongue. Referring to the development of ideas in the mind, he said that the reason why young people seldom cared to read really good literature was that their own ideas were undeveloped, and could not rise up in response to the lofty thoughts of the writer whose volume they were handling. Similarly, if it was poetry or poetical prose they failed to appreciate the beauty of the rhythm, because they had never heard it properly read aloud, the only relief from their own recitation being that of their form-master, which was often rather worse because rather louder. Hence the prime importance of teaching boys to write English; it was the best way to encourage the healthy growth of ideas necessary to all intelligent reading.

Mr. P. J. Hartog, of the London University, described experiments he had carried out with pupils of different ages to teach English composition. He had, he said, obtained good results by first reading out a story in bald outline, and afterwards setting the pupils to write it out, supplying incident and colouring from their personal experience. The plan of giving pictures as the subjects of composition had also proved satisfactory. Mr. Hartog read numerous essays written by pupils of different grades of schools.

THE TEACHING OF GEOMETRY.

The methods used in various subjects of science and instruction in mathematics have taken so prominent a part in the London Technical Education Board Conferences of the last five years, and at the North of England Conference at Manchester last year, that these subjects were naturally given a subsidiary place in this year's meetings. At Leeds no papers dealing with science or mathematics were read. At the last meeting of the Chelsea Conference Prof. Perry, F.R.S., presided, and in the course of his introductory remarks said the subject of reform in geometry teaching was in an experimental stage, that healthy stage in which they were all earnest and anxious to describe their own experiences and to hear those of others. He thought they were all agreed that not only must Euclid's sequence be given up, but that there could be no mental training in abstract reasoning about things of which boys had no clear conception; and he recommended that courses of experimental geometry for young boys should be preliminary to a course of demonstrative geometry. When boys were being taught through their own experiments, those experiments should be connected by reasoning and demonstration. Though there was difference of opinion in some particulars, all were agreed that a method used by one enthusiastic teacher might not suit another set of boys under another teacher, and no hard and fast syllabus was wanted. He desired to leave even the sequence of subjects to each teacher's own initiative. His view was that mathematics should be taught experimentally with just so much reasoning as we are accustomed to in the teaching of other experimental sciences. If a boy measured with a scale showing tenths and hundredths of the unit length, he could use decimals at the age of seven. If he measured areas, volumes, and specific gravities, if he weighed things and played at keeping shop, he very quickly got to have an understanding interest in computation. If algebra was freely used by him, and if there was sympathy between the mathematical master and the experimental science master, the pupil would very quickly understand logarithms, the use of complex formulæ and of squared paper, and would find areas and rates of increase. His experimental work and demonstrative geometry would go along with exact knowledge of sines and cosines, the tangents of angles and solution of triangles, with the deduction of vectors and with experimental statics and dynamics. He saw no reason why a boy aged 14 might not to have a sound working knowledge of the methods of the infinitiesimal calculus, and of the scalar and vector products, gained through all sorts of experiments. Such a course could be made interesting and sound for the average boy, and the exceptional boy with this kind of training would be in a position to begin upon those higher mathematics which were of use to the physicist and engineer.

Mr. R. W. Bayliss, of St. Dunstan's College, Catford, gave an address on practical work in the teaching of geometry, and claimed for the new method of teaching geometry that it stimulated a boy's reasoning powers and raised intellectual possibilities in a remarkable manner in comparison with the results of mere book-learning.

THE TEACHING OF SCIENCE.

The only important discussion this year of methods of teaching science took place at the annual meeting of the Public Schools Science-masters' Association, held at Westminster School, on January 16th, under the presidency of Prof. Tilden, F.R.S. In his address the president said the science master had better opportunities than almost anybody to try educational experiments, and he himself wished he could go back and rectify some of the mistakes he had made in early days when he began to teach physical science. No association of that kind existed thirty years ago, and they had to create their own methods and make bricks without straw. There was not much sympathy on the part even of the public, and certainly not much on the part of headmasters, for the sort of work which was then finding its way into the public schools. With regard to the position of physical science as a school subject, it was in some respects, he thought, unfortunate that there were so many useful applications of science, because it was not on account of its usefulness—that was to say, its direct application to the service of man—that many of them thought that it ought to form an integral part of every school curriculum, whether for girls or boys. It was, he thought, mainly on the ground of its very great educational advantages, and especially the cultivation of the power of seeing, for most people seemed born into the world blind, or half blind. Somehow or other they must open the eyes of children, and the best instrument in that process was some division or other of physical or natural science. There seemed to be no other subject in the school curriculum, except, perhaps, in a minor degree, drawing, which had this kind of effect.

Mr. R. E. Thwaites, of Malvern College, read a paper on the possibility of fusing the mathematical and science-teaching of public schools. The increasing favour with which mathematical men were regarding the practical bearings of their subject led one to hope, he said, that a closer amalgamation might be possible between the mathematics and science staff than had existed hitherto. The Army Committee had decided that candidates must take a course of practical measurements as part of their mathematics, and this could only be carried out properly in the physics laboratory. He urged further that the usual method of teaching mechanics was unsatisfactory, and that the subject should be introduced by a course of experiments. The question arose, who was to teach this extra practical work? The science staff was fully worked already, and the mathematical men had no experience of laboratory method. The solution lay in ensuring a supply of mathematical men with some practical experience of physics. To this end it was desirable that University authorities should include a certain amount of practical physics in the Honours mathematical course.

Mr. O. H. Latter, of Charterhouse, read a paper on nature-study, with which we hope to deal fully next month. Probably all, he said, had a pretty clear conception of the scope of nature-study. Its objects were to train the eye to observe what it saw, and the mind to think about what was seen, to teach a knowledge of things and processes at first hand, and, by awakening intellectual interest, to inculcate a habit of mind that should influence the whole character. It was no small gain that, incidentally, the virtues of neatness, dexterity, and patience were encouraged, and the æsthetic side of the mind developed to appreciate beauty of form and colour. It was clear that the subjects dealt with by any teacher must concern primarily those things that come under the frequent notice of his pupils. Matters astronomical and meteorological were nearly the same for all in England, but otherwise the physical features and the fauna and flora of the immediate neighbourhood of the school claimed first consideration. The season of the year would go far to determine the choice of material, and an orderly sequence of lessons was not essential.

At the Chelsea Conference Mr. W. Hibbert, of Regent Street Polytechnic, London, exhibited and explained new instruments and apparatus for the teaching of electricity and magnetism.

OTHER SUBJECTS.

At the Leeds Conference Dr. Somervell, of the Board of Education, dealt with the subject of music teaching as it affects secondary schools. He argued that music was not there treated educationally. When a girl left school she, as a rule, he said, knew nothing of the history of music, little or nothing about

grammar, probably nothing about form, and was quite unable to read at sight with anything like fluency. Young men and women with a knowledge of what music was, and with the ability and intelligence to understand it, ought to be the products of secondary-school teaching. The average person attending a concert could not say whether he had been listening to a symphony, a concerto, or a sonata; and as to understanding the key in which a piece was written, he gave it up as a bad job.

Mr. T. P. Sykes, of Bradford, pointed out that the first difficulty of the teacher was to overcome the indifference of the children. He had heard of a village school of boys and girls where the boys absolutely refused to sing. They looked upon singing as a purely feminine accomplishment. His plan with such boys would be to try the effect of a comic song upon them.

Commercial education was also discussed at Leeds. Alderman J. H. Wurtzburg, of Leeds, who presided, remarked that the commercial world needed further convincing as to the necessity of commercial education; and the demands for special training would have to be more active if parents and scholars were to be induced to make the necessary sacrifices. The great contributing cause of the success of the Germans and Swiss in commerce could be found in the readiness and perseverance of the young men of those countries, who were prepared to go into foreign countries to study on the spot the needs of the district. If we were to beat them it was necessary that our young men should go abroad.

Prof. J. H. Clapham, of the Yorkshire College, read a paper in which he contended that commercial education was by no means distinct from other branches of education. The scepticism with which many educational experts regarded all teaching that called itself commercial was due to a belief that, instead of training judgment and the power to think, it tried to inject much "useful" information about accounts or foreign bills perhaps; that it set boys from the outset the ambition of adding a few shillings to their weekly earnings or securing fresh markets for English goods and nothing more. But he urged that their aims and methods should be such as to stand the criticism of educational experts as well as of business men.

Mr. W. H. Barber, of the Leeds Boys' Modern School, dealt with the question, "What relation have secondary schools to the demand for commercial education?" and pointed out various ways in which secondary education might assist in giving boys a better equipment for commercial life.

HISTORY AND CURRENT EVENTS.

WALTER BAGEHOT, in his book on the English Constitution, written in the 'sixties of the last century, speaks with great reserve of the Queen and her share in the working of the government of this country. He says, "our children" will know more of Victoria than "we" do. The Victorian era is now passing into written history, and in such biographies as that of Mr. Gladstone, which appeared last autumn, we have much which will serve to correct the current ideas of the British constitution. There we learn how far from the truth is our usual talk about the functions of the Sovereign, specially at a change of ministry, even the most inevitable. The story of the crises of 1874 and 1880 in especial show the Queen, as the head of the State, exercising much wisdom and tact in the choice of ministers. We hear also much of the relations between a Premier and his Cabinet. We see that his power over his colleagues depends on circumstances, and on his personal character. Above all, in the story of the fall of Beaconsfield, in 1880, we seem to get some explanation of the origin of that confusion in party politics which has prevailed since the conclusion of the great Liberal programme of 1868-74. We are now in need of a new Bagehot to explain again to us how our constitution works.

THE discussion of our fiscal problem has naturally led to increased study of the social and economic conditions in various countries, specially in the two countries that are supposed to be our great trade rivals—Germany and the United States of America. Mr. C. S. Loch has been reading a paper to the Charity Organisation Society (of which he is secretary), on the system of poor relief that prevails in Elberfeld and its district. Contrasting that system with possibilities in England, he remarked that "in this country the people had to acquire a sense of voluntary and personal responsibility in regard to poor relief which in Germany had never been lost." We may profitably pause here for reflection, specially on the last clause, and ask why we have lost in England what has been retained in Germany. The answer may probably be found in the history of the sixteenth-century poor law. The poor we have always with us, but paupers (thing and word) came in with the Reformation. It is interesting to trace in Tudor poor-laws till their codification in 1601 the substitution of state methods for voluntary ones in the treatment of those unable or unwilling to work.

FROM Manchuria we received recently a curious illustration of the nature of government in general. Certain bandits, who had captured a Chinese fortress, were tried as criminals by the Russians. The defence was that they had done only the same as was frequently done by Russia's regular troops (their success, indeed, was largely the result of their victims believing they were Russians). The Russian authorities naturally overruled the somewhat inconvenient *tu quoque*, and sentenced the "criminals" to six years' penal servitude. But, though we may recognise the difference, it is worth while stating for ourselves the grounds and the nature thereof. One is reminded of the old story of Alexander the Great and the bandit, which, according to the traditional version, ended in an acquittal.

CURRENT events in the Church of England set some of us thinking of the Restoration Settlement, the Clarendon Code, and in general of that period of our national history commonly known as that of the "Later Stuarts." We refer, in modern matters, to the case of Mr. Beeby and to the lectures which the Dean of Westminster has been giving on the use of the Athanasian Creed. These two clergymen, in their various ways, are somewhat parallel to the Nonconformists of the seventeenth century, *i.e.*, to those members of the Established Church who, while members of the Church and many of them in possession of livings, did not entirely conform to its formulas or to the prevailing interpretation thereof. In 1662, the seventeenth-century controversy was so far ended that all clergymen were required to give their "unfeigned consent and assent to all" that was contained in the Book of Common Prayer. From that rigid conformity both Charles II. and James II. strove to release nonconformists by "dispensing with and suspending" Acts of Parliament. Now that the clergy are required to give only a general consent, we find the Dean of Westminster saying that "in cases where rules press hardly and legislation could not at once be had, dispensation, as a temporary measure of relief to troubled consciences, was the true method of the Church." But Bishop Gore does not adopt this remedy with Mr. Beeby.

ITEMS OF INTEREST.

GENERAL.

THE preliminary meeting of the Classical Association of England and Wales was held, as we announced in our last issue, at University College, London, under the presidency of the Master of the Rolls, and must be considered to have been a success. The variety of topics touched upon by the speakers, and the interest shown in the proceedings, augur well for the future of the Association. Time did not allow of the details of a constitution being considered by the meeting; but its objects were defined, a modest entrance fee fixed, and an *ad interim* council elected for the organisation and direction of the Association till the first annual meeting. From the objects of the Association it will be seen how comprehensive is its scope, and how various the interests that it appeals to. The objects of the Association are to promote the development and maintain the well-being of classical studies, and in particular:—(*a*) To impress upon public opinion the claim of such studies to an eminent place in the national scheme of education; (*b*) To improve the practice of classical teaching by free discussion of its aims and methods; (*c*) To encourage investigation and call attention to new discoveries; (*d*) To create opportunities for friendly intercourse and co-operation between all lovers of classical learning in this country. To those who, whether as head or assistant masters and mistresses in public, grammar, or preparatory schools, are brought face to face with the problems, urgent and difficult, of classical teaching and curricula, the facilities which the Association is likely to offer should be especially valuable, and the presence on the council of teachers who have shown themselves alive to educational requirements in classics, as the Reader of Greek at Oxford, Mr. A. Sidgwick; the headmaster of Westminster, Dr. J. Gow; the Professor of Classics at Birmingham University, Prof. E. A. Sonnenschein; and the Editor of the *Classical Review*, Prof. J. P. Postgate, to speak only of a few, is sufficient guarantee that this side of the Association's work will not be neglected. We may add that a large number of headmasters and headmistresses, including those of the great public schools almost without exception, and a considerable number of their assistants, have already joined, the total adhesions amounting to 500. The entrance fee covering the first subscription has been fixed at five shillings. The acting secretary is Prof. Sonnenschein of the University of Birmingham. Since the above was written we have been informed that the date and place of the first regular meeting have been fixed. It will be held at Oxford on July 8th and 9th. The Council has been enlarged by the co-optation of several new members, including Miss Gavin, of the Notting Hill High School, and Dr. Rouse, Headmaster of the Perse School, Cambridge.

IN all its twelve years of existence, the annual meeting of the Modern Language Association, held at the College of Preceptors at the end of December, was probably the best attended and most successful meeting the Association has held, no doubt due partly to the great increase in membership during the past year. The retiring president, Sir Arthur Rücker, delivered a weighty address on the work the University of London has done, and will hoped to do, in the field of modern languages. Dr. Breul paper on "Herder and England," in commemoration of tenary of Herder's death; M. Minssen, of Harrow, d a witty "*Causerie sur les Auxiliaires de la Conversa-Classe*," in which he showed how spare moments might t profitably utilised. Mr. Coulton followed with a ly practical paper on "Modern Languages and Modern ept;" and Mr. W. M. Poole concluded the first day's ss with a paper on "French Grammar." On the second day Mr. Cloudesley Brereton started a discussion on "Some difficulties in the Direct Method of Teaching Modern Languages." Miss Williams, of the International Guild, conveyed a warm invitation to the Association to hold a meeting in Paris at Easter. We trust sincerely that sufficient members will respond to this invitation. The concluding item of the programme was to many the best. It was a careful and inspiriting address by Prof. Sadler, the President for this year, on "The Influence of the Educational Writings of Herbert Spencer." We may add that the energetic honorary secretary of the Association is Dr. E. R. Edwards, University of London, South Kensington.

IN his speech as president-elect of the Modern Language Association, Prof. Sadler, at the recent annual meeting of the association, traced the influence of Herbert Spencer's educational writings. Nearly half a century had elapsed, said Prof. Sadler, since Spencer's remarkable essay on Intellectual Education appeared. That essay was full of the spirit of Pestalozzi. Spencer had been trained under Pestalozzian influence, and knew the weakness and the strength of the system. Pestalozzi, Spencer thought, was right in his fundamental ideas, but not right in all his applications of them. Accordingly the English thinker set himself to apply Pestalozzian principles anew. The result was the most brilliant chapter of the four which made up his "Education." It was Spencer who dealt the heaviest blow at false ideals in the education of girls. It was he who roused multitudes of his fellow-countrymen from their strange disregard of physical education, and he boldly laid stress on the educational value of keenly contested school games. Like Pestalozzi, he insisted that in education the earliest years were the most important, and that, therefore, the most valuable of all educational influences was found in the rightly ordered home. It was Spencer who urged, as many were urging now, that in education the individual mind should be guided through the steps traversed by the general mind, and that, so far as might be, education should be a repetition of citizenship in little. It was he who maintained that children should be led to make their own investigations and to draw their own inferences; that they should be told as little as possible and induced to discover as much as possible.

AT the annual general meeting of the Incorporated Association of Headmasters the following resolutions were adopted: That grants to secondary schools, whether from the central or from the local authority, should be given in respect of the general work of the school, and not for special subjects, and that they should be considerably increased. That all secondary schools, provided or aided by the local education authority, should be administered by governing bodies under school schemes approved by the Board of Education. The resolutions which have been already adopted by the Assistant-masters' Association were approved *en bloc*. Among numerous other interesting events at the meeting, Mr. W. C. Fletcher's address on his experiences with the Mosely Commission on Education must be mentioned as well as Dr. McClure's address on introducing the subject of co-education and mixed secondary schools.

AT the annual general meeting of the Incorporated Association of Assistant-masters the following resolutions, amongst others, were adopted:—"That this meeting welcomes the London Education Act, whereby the London County Council is constituted the sole authority for all grades of education throughout the county, and trusts that provision will be made for the due representation of secondary teachers upon the education committee about to be established." "That inasmuch as the I.A.A.M. is fully representative of the assistant-masters in the secondary schools of London, and is the only

association so representative, in the opinion of this council it should be allowed to recommend a member for election to the education committee for London about to be established." "That the present distinction between Division A and Division B secondary day-schools should be abolished, and that in the distribution of Government grants for secondary education equal encouragement should be given to all types of curriculum." "That this meeting deprecates the establishment of higher elementary or secondary schools receiving rate-aid in localities where there is already sufficient provision for secondary education, and urges the Education Department to use its powers to prevent such action."

AT the twelfth annual meeting of the Association of Principals and Lecturers in Training Colleges under Government Inspection, held at the end of December, Sir William Anson said the essential thing in such an education as the training colleges gave was to turn out the teacher not highly educated, not universally informed, but capable of acquiring information and possessing the habit of mind which could distinguish knowledge from ignorance. Ignorance was not a bad thing if it knew itself, and if it were ready to accept knowledge; but ignorance which believed that it was knowledge was a fatal habit of mind to acquire. They should not let any student go forth believing that he knew a thing because he had a note-book full of miscellaneous recollections of what a lecturer had told him. Students should be made to use their observation and intelligence and not merely their memories. A great many of the difficulties which the training colleges had to contend with arose from the pupil-teacher system, and it was his earnest hope to see it remedied; but until it was, the training colleges should limit their ambitions to such teaching as their students could imbibe.

SIR OLIVER LODGE delivered his presidential address at the general conference of the Teachers' Guild on January 12th. His main thesis was that reform was necessary in the schools of England, and not least in the great public schools. There was no other right and feasible reform of greater magnitude and urgency, as it was in the schools of England that our officials, administrators, rulers, future teachers, pastors, and masters were being yearly trained, and the effect of that training operated like the circulation on the human body. The reform he spoke of was an intellectual one, and the fault he had to find with the schools was that the majority of the boys turned out of them were ignorant. They neither possessed knowledge nor did they know how to acquire it, and they had neither interest nor respect for it. They were not ashamed of their ignorance nor were they usually aware of it. The attention of English public schools had been devoted too exclusively to character and discipline. Their aim was to produce a healthy and vigorous body and the traditional culture to be expected of a gentleman. The whole process of instruction should be overhauled, that methods should be studied and organised, and made efficient, and that the work should be conducted by trained and enfranchised teachers under improved conditions. The broad features of the methods of instruction at the present time were that they were disciplinary instead of educational. The act of learning was considered more important than that which was learnt. Speaking generally, there was really no attempt made to awaken curiosity and hunger for knowledge. No attempt was made to get children to seek knowledge for themselves, and especially to glean facts from Nature itself at first hand. Every study could be made to give mental discipline; the training of the mind was even more efficient when the thing plodded over was really learnt.

THE Committee of the Geographical Association record, in their Annual Report for 1903, a steady increase in the number of members during the past year. Seventy-one new membe have been added, making the total membership 341. T members now include teachers of every grade, school inspecto directors of education, members of technical education co mittees, and others interested in geographical education, bo at home and abroad. At the annual meeting held on January 6t Mr. Mackinder was elected a seventh vice-president, and interesting discussion on the recent syllabuses of Geograp published by the Royal Geographical Society took place. T Hon. Sec. of the Association is Dr. A. J. Herbertson, 4, Bro Street, Oxford.

PROF. H. A. STRONG delivered the annual lecture to t Arts Association of the University of Liverpool on Janua 20th. The subject chosen was "The academical teaching modern languages and their place in a university curriculum."

THE last annual report of the School Management Committ of the School Board for London contains interesting details the development of elementary education under the Sch Board in London. For the year ended at Lady-day last t average roll of all schools except special schools was 549,677, against 546,370 in the previous year, and the average attendan was 475,150, as against 462,840, the percentage of aver attendance on the average roll being 86·4, as against 84 The roll has therefore increased 0·6 per cent., and the aver attendance 2·7 per cent. The teaching staff of the schools co sisted on March 25th of 11,904 members. Of this number 4 were headmasters, 957 head mistresses. The increase in t staff was 21 head teachers and 564 assistant teachers. T average number of children to each adult teacher was 41·9, against 42·2 in 1902. The average salaries of the teache were: headmasters, £292 12s. 9½d.; headmistress £209 3s. 6¾d.; assistant masters, £141 14s. 1d.; assistant mi tresses, £103 12s. 1d.

THE first international congress of School Hygiene will b held at Nuremberg from April 4th to 9th, 1904, and commun cations have already been announced from many authorities o the education and healthy training of children. Prof. Cohn, Breslau, will introduce the subject, What has ophthalmolo done for school hygiene, and what has it still to do? Pro Axel Johannesen, of Christiania, will describe the state school hygiene in Norway; Dr. Le Gendre, of Paris, will d course on the hygiene and the personal diseases of teacher Dr. Sickinger, chief inspector of the board schools of Man heim, will take as his subject the organisation of elementa schools based upon the natural capabilities of the childre Prof. Liebermann, of Budapest, will define the duties and traini of medical officers of schools; Prof. Hueppe, of Prague, will re a paper on the prophylaxis of infectious diseases in school and Prof. Eulenburg, of Berlin, has chosen the subject of t suicides of scholars. Communications from all interested shou be addressed to Herr Max Versen, editor in chief of t *Fränkischer Kurier*, Nuremberg.

THE first social meeting arranged by the Incorporat Association of Assistant-masters for the informal discussion educational problems was an unqualified success. From si to seventy educationists met at the Bedford Head Hot Tottenham Court Road, London, on January 21st, and co pared notes on the co-ordination of educational effort. Garnett was among the guests of the evening and provide number of interesting educational problems for considerati The movement is an excellent one and we wish it contin prosperity. The next meeting is to be on February 18th.

THE Prussian Ministry of Public Instruction is preparin work on German education for the St. Louis Exposition. book is to contain a complete account of German instructio

all its branches at the present time, and also an account of its historical development. There will be over a hundred contributors, the introduction being written by Prof. Paulsen.

THREE new correspondence clubs for the study of pedagogics have been started this term. Clubs are at present engaged upon the study of Prof. James's "Talks to Teachers on Psychology," Rousseau's "Emile," Spencer's "Education," and Thring's "Education and School." It is not too late to inaugurate other clubs, and teachers who desire to co-operate with their colleagues in such private study as this plan affords should communicate at once with Mr. A. T. Simmons, c/o The Editors of THE SCHOOL WORLD.

THE Hon. Mr. Auberon Herbert, one of the executors to the late Mr. Herbert Spencer, has presented a complete set of Mr. Spencer's works to the Senior House Library of Clayesmore School, Pangbourne, Berks.

THE first number of *School*, the new educational magazine published by Mr. John Murray, is excellent. We hope that the appearance of such new publications is an indication of a growing interest in education throughout the country, and an acknowledgment of the importance of the work of our schools in preparing boys and girls for their life's career. *School* is attractively produced, and contains a selection of articles likely to interest many who are engaged in the administration of education as well as schoolmasters and schoolmistresses themselves. We wish the editor and publisher of this addition to educational periodicals every success in their venture.

"KNOWLEDGE DIARY and Scientific Handbook" for 1904, published from the office of *Knowledge* at 3s. net, will be quite as popular with science masters and mistresses as previous issues. The numerous articles which the volume contains are mostly of a practical kind, and will appeal particularly to teachers of nature-study.

WE have received a copy of Mr. H. M. Thompson's paper on "the Relations between Public Education and Public Libraries," reprinted from the *Library Association Record*. Mr. Thompson is the chairman of the Library and Picture Committee of the Cardiff School Board, and in his essay he describes recent experiences at Cardiff in providing libraries for the elementary schools of the town. He rightly insists that to teach children to read is not the whole of our duty, we must also train them to read good books. We heartily commend this account of what has been accomplished in this direction in the schools of Cardiff to our readers, for the example set at Cardiff deserves to be widely copied. We learn also from the pamphlet that "teachers' tickets" are issued to all members of the profession in the town, enabling each to borrow from the public library five volumes at a time, a concession which must be a valuable help to any teacher who is working at subjects which require reference to several volumes simultaneously.

THE Board of Education, in co-operation with the Council of the Society of Arts, intends during the present year to hold, in the Victoria and Albert Museum, South Kensington, an exhibition of engravings produced by mechanical means, such as photogravure and other photographic processes, as a sequel to the Exhibition of Engraving and Etching held during last summer; and, as great advancements have been made in printing in colours since the Exhibition of Modern Illustration in 1901, specimens of colour printing will be included.

SCOTTISH.

THE annual congress of the Educational Institute of Scotland took place this year at Inverness. The special difficulties and problems of the educational situation in the remote districts of the north and west received, as was natural and fitting, special consideration. It was clearly shown by various speakers that the ordinary machinery for managing and financing Highland schools had entirely broken down. The schools were poorly equipped and inadequately staffed, and yet the school rates in some of the outlying parishes in Lewis came to 5s. in the £. Yet, notwithstanding this intolerable financial burden, these districts were only able to command, as a rule, the services of untrained and uncertificated teachers. The special difficulties of such places, where Gaelic was the mother language, would tax the resources of the best teacher the training colleges could produce, and every year the prospect of obtaining any but the most meagrely qualified teachers was steadily diminishing. Among the remedies suggested were: (i.) Special inducements to attract into the profession boys and girls of good ability, and the provision of special facilities at recognised centres for training them up to the standard of the urban centres. (ii.) The establishment of a training college at Inverness. (iii.) The institution of holiday courses at selected schools over the country, so that rural teachers might observe the most approved methods of teaching in actual operation. (iv.) Increased grants from Imperial sources for Highland parishes.

MR. MUNRO-FERGUSON, M.P., delighted the meeting by an Address on "Coming educational legislation in Scotland." Mr. Ferguson said that fortunately the educational problem was not complicated in Scotland by sectarian prejudices and animosities. Considering how free they were in Scotland of all such difficulties, their educational machinery should be more efficient than it was. At last they seemed to be within sight of a solution which would once again restore Scotland to her wonted place. All who took an interest in education were agreed on these points: That the area of administration should be enlarged; that it should be controlled by a specially elected body; that a Scottish Council should be established to advise the Education Department on questions of policy. To establish such a Council meant the transfer of the Department from London to Scotland, as the advisory body and the advised must be within easy reach of each other. He wished it to be understood that it was not the *personnel* of the Department but the system which he condemned, and he paid a high compliment to Sir Henry Craik for his great services to education—services, however, which were limited by the unfortunate conditions of the Department over which he presided.

DR. BRUCE, Dingwall, medical officer of health for Ross and Cromarty, gave an address on "Medical inspection of Schools." Dr. Bruce said he had decided views as to the need for limiting the medical inspection of schools within due limits, but held strongly to the belief that the school ought to be made the centre for the propagation in a practical way of the principles of hygiene. He said it advisedly, that most school buildings in country places had been set down in situations, and planned internally, almost without reference to the laws of health. For this reason he was of opinion that the hygienic control of the school should devolve on the medical officer of health for the district, and his approval should be required before any school site was finally determined. He urged further that there should be a periodical medical examination into the physical condition of each pupil, and a record kept of the reports for purposes of comparison from year to year.

THE annual general meeting of the Association of Teachers in secondary schools was held in the Royal High School, Edinburgh. Mr. J. B. Clark, Heriot's School, was elected president, and Mr. J. N. Macdonald, secretary for the ensuing year. Mr. D. Mackay, Ayr Academy, in his retiring presidential address, said that the Education Department in London

was too remote to be in close touch with Scottish opinion. On many points its policy seemed to be in opposition to expert advice, yet there was no means whereby modification of that policy could be ensured. In illustration of this, Mr. Mackay referred to the apparently hostile attitude to modern languages that many alleged had marked the department's policy during recent years. Mr. Mackay pressed for the creation of an Advisory Council to the Education Department. The duties of such a body would be: (i.) The correlation of schools of different stages of advancement and of different types. (ii.) The arrangement of the curricula of all kinds of schools, and the preparation of a code of higher education. (iii.) The training and registration of teachers. (iv.) To act as a court of appeal in matters affecting the status of teachers. The constitution of this advisory body might very well take the form of the French *Conseil supérieur de l'instruction publique*, and then would have: Members nominated by the school board; representatives of the various faculties in the universities; representatives of the various types of secondary and technical schools; representatives of the elementary school.

AT a meeting of Glasgow University Courts last week, Prof. Raleigh put forward a strong plea in favour of adequate and distinct recognition being made for the teaching of English language in the university. The Scottish universities, he said, had long recognised the value of English literature as an instrument of culture; it remained for them to grant an equal recognition to the scientific study of the English language, without which a great and noble school of English studies could never be built up. Prof. Raleigh concluded by asking the court to give their encouragement and help towards the foundation of a chair or highly paid lectureship in English language. General sympathy was expressed with the idea, and the court said they would be glad to consider the matter more fully as soon as practicable.

THE written examinations for the Leaving and Intermediate Certificates of the Scotch Education Department are announced to begin on Wednesday, June 22nd. The list of pupils who are to be candidates for the examinations must be forwarded to the department by March 1st, on a special form which can be obtained on application. Candidates will not be admitted from any school which does not present some of the pupils in mathematics, or in higher English, or in ancient and modern foreign languages. No candidate will be admitted to the examination unless he or she be at least 13 years of age on October 1st next, following the proposed presentation, and it is further advised that pupils under 14 years of age should not be presented unless there are special circumstances warranting their presentation.

THE circular of the Department in regard to the papers in modern languages states that in order to encourage the teaching of German script, the marks for fair writing in the German characters will no longer be additional as hitherto, but shall form an integral part of the examination. The circular again emphasises the importance of giving greater attention to the oral side of modern languages, and directs attention to the fact that it has been found necessary to refuse to admit to the examinations candidates from schools where the report of the Inspector who visited the school showed that pronunciation had been neglected.

THE Franco-Scottish Society offers for competition among Scottish students who have attended one or more of the French classes in any of the Scottish universities or training colleges during the sessions 1902-3 or 1903-4, four travelling bursaries of £30 each. The bursaries will be awarded on the result of an examination, which is announced to take place on March 12th at the four university centres. The successful candidates must pursue their studies in France for at least one year.

IRISH.

THE rate at which the School Grant for the year 190 has been calculated by the Intermediate Education Boar follows for each candidate passing:

For Pass Candidates.

Preparatory grade...	£5 16s.
Junior grade	£8 14s.
Middle grade	£17 8s.
Senior grade	£26 2s.

For Candidates with Honours.

Junior grade	£13 1s.
Middle grade	£26 2s.
Senior grade	£39 3s.

This method of calculating the school grant at so mu *caput*, although preferable to the old system of paying so for every hundred marks obtained, cannot be regarded a or satisfactory. It is not desirable that a boy or girl sho able to say that he or she has earned so much for a s amounting in the higher grades to considerably more th school fees paid. The Intermediate Board, it is true, h on paper for some time, a scheme whereby this method be modified by a reduction or increase in the grant accor the report following upon inspection, but this has not ye put into operation, and the method of inspection adopted the past two years has not been of a character to inspi fidence.

WE believe that the Commissioners are again endeavou arrange with the Treasury for the appointment of per inspectors, the point at issue being the manner of their p out of Intermediate Board funds. It has been suggested saving should be made by dropping the pass examinatic retaining only the honour examinations for prizes and exhi This would certainly encourage paying more attention best boys and girls to the neglect of the others, which only be partially counteracted by inspection, and it r emphatically asserted that Irish Intermediate Education yet ripe for the abolition of a yearly examination. I replied that inspection has largely taken the place of a examination in primary education and that it is being m more developed there to the exclusion of examination, the is that a large proportion of the teachers in primary sch trained, and therein lies the chief guarantee for the effici the education. It is along the line of training that Inter Education must progress, and although the Intermediat missioners are clearly fighting shy, they will find the compelled to acknowledge this later, and an excellent been shown them by their partners, the Department of Te Instruction, whose scheme of trained teachers, will, i years, result in experimental science being the best ar efficient branch of school education. The scheme ha some objectors, but as its principle is sound, the sch acquiescing in it, if not welcoming it with enthusiasm.

THE lectures of the Royal Dublin Society adapte juvenile audience and forming a kind of popular scientifi for the Christmas holidays, have this winter been deliv Mr. Barrington on "Birds," Prof. Grenville Cole or Action of Water on Land," and by Monsignor Mo "Light."

THREE Dublin educational bodies—the Dublin and Irish Branch of the Teachers' Guild, the Central Associ Irish Schoolmistresses, and the Christian Brothers' Assoc have united to arrange for a course of lectures on Reformed Methods of Teaching Mathematics," in or

the new methods may be acknowledged and adopted by the authorities in Ireland. The lectures were delivered in the Alexandra College by Mr. A. W. Siddons, mathematical master at Harrow, and one of the secretaries of the Mathematical Association, and were six in number, extending over four days, January 19th to January 22nd, embracing arithmetic, algebra, geometry, and elementary trigonometry.

THE proposed University Conference has practically fallen through. When, in December, Capt. Shawe Taylor published the names of the members of the conference, there were so many disclaimers, including Archbishop Walsh and President Hamilton, that it was obvious that he had not taken sufficient pains to secure, in proper form, their consent to act. He was compelled to postpone the meeting of the conference, but even if it ever comes together, its resolutions will now carry little or no weight, as it will clearly not consist of persons of adequate importance.

THE discussion on the University question, however, proceeds apace in all the Irish newspapers and has been useful in eliciting views and proposals of divers kinds which are helpful in clearing the air, and tend towards the suggestion of some practical scheme. The past month has seen two important schemes outlined, one by Judge O'Connor Morris in the *Fortnightly Review*, and another for a National University by Lord Dunraven, which has been favourably received by the Nationalist press, and seems to coincide in many ways with the demands of "Home Rule" Members of Parliament. Some extracts from the latter will explain it. "The report of the recent Royal Commission has made it perfectly clear that so far as the vast majority of the Irish people are concerned the existing condition of University education is bad. The proposals of the Royal Commission have not proved acceptable to any considerable section of Irish public opinion. The ideal might be realised by the establishment within the University of Dublin of two additional colleges—the Queen's College, Belfast, and a King's College, to be established in Dublin—which colleges, like Trinity, should be well equipped financially, and should be autonomous and residential, with governing bodies selected exclusively on academical grounds. There is no question of a Roman Catholic University, or of the prescription of any kind of learning, or of a college exclusively for Roman Catholics, or of a college, to every post and emolument of which a Protestant may not aspire; just as a Roman Catholic may aspire to posts and emoluments in Trinity College, or the Queen's College, Belfast. But it seems to me only fair, subject to these safeguards, that my Roman Catholic fellow countrymen should be given the educational facilities they desire." Lord Dunraven believes that Roman Catholics who, as a whole, object to entering Trinity College, would gravitate toward this proposed King's College and make it essentially Roman Catholic in tone, while at the same time it should not be dominated by Roman Catholic clerical influence.

WELSH.

THE Forden case is still to the front, and is likely to be. Let us recall the facts. The Montgomeryshire County Council, on October 20th, passed a resolution against granting any rate aid to the voluntary schools, and then ordered a twopenny rate for educational purposes. Now in the Forden Union the only schools are voluntary schools. Accordingly, the guardians on November 11th, decided by a majority of 16 to 11 not to levy the rate on their Union. Whereupon the County Council threaten that if the resolution of the Union be not rescinded, they will send the precepts to the overseers direct, and charge a further 10 per cent. for collection. Some of the guardians thought that having made a protest, the resolution should be rescinded, in view of the consequence of the avoidable extra charge. The motion, however, to rescind the resolution, was negatived by 19 to 10. It was then agreed by the Forden Guardians to send a request to the County Council to rescind their resolution not to grant rate aid to the voluntary schools. The amount of the rate apportioned to Forden is £540.

SOME bold and interesting words have been spoken by Mr. Lloyd George. They deserve to be noticed. He describes the attitude of opposition to the Education Act in Wales as an "uprising of the people such as has been unparalleled in Wales since the time of Llewelyn." It had been threatened, he said, that the Government would stop the grants to the Councils (in view of the fact that they would not levy rates in support of voluntary schools). "If that were done, the Welsh Councils must wash their hands altogether of the administration of the Act. . . . The education of Welsh children would not suffer. If every school were closed, every chapel would be opened as a schoolroom. The schools would be maintained by voluntary effort, and their children would then receive a higher education than any children had ever received in this land. The teaching so given would burn into their hearts and memories, and last to all eternity." This is one of those statements which surely the late Herbert Spencer would have welcomed as a sign of re-action in the direction of Individualism. But what will Socialistic Welsh people have to say on the matter? Moreover, if Mr. Lloyd George really thinks that schools "maintained by voluntary effort" by the Welsh people would lead to a "higher education," ought this matter not to be inquired into on its own merits, quite apart from the points in dispute? For what all educationists want we must remember, is just this very thing, that children should receive a "higher education" than they have heretofore received.

THE Barry Elementary Schools have had a high reputation. The new Barry Education Committee (which by the way possesses a majority of Free Churchmen) have just agreed to enter into a compromise with the Catholic school in the town, the only non-provided school in their jurisdiction. The nature of the compromise is as follows: The headmaster of the Boys School, and the headmistress of the Girls' School, and in each school one further trained certificated teacher, shall be Roman Catholics, but shall be selected by the Education Committee, though appointed from the selected list by the managers. The remainder of the staffs, to the number of not more than three non-Catholics shall be similarly appointed. On entering on this arrangement the local Education Authority has substantially increased the salaries formerly given to the staffs. The Barry Free Church Council have condemned the action of the Education Authority, and have determined to oppose all candidates at the next County Council and District Council Elections, who are favourable to the compromise. On the other hand, it is reported that at Mountain Ash, on a recommendation from the attendance officer that five children absent from the Roman Catholic School there should be prosecuted, the Mountain Ash Education Committee decided to take no action as to children from the Roman Catholic School.

MERIONETHSHIRE Education Committee is getting to work. They have decided that it is desirable to adopt a syllabus of Biblical instruction. The proposer thought that during the hours of religious instruction, the schools should be open to all interested in the schools, to hear what was taught in religion, but it was pointed out that such a course would inevitably raise controversy. The same committee have begun to consider the relations of the elementary and intermediate schools. It was suggested that a payment of railway fares should be made of all pupils in one of the schools. It was suggested that the sixth and seventh standards should attend the higher grade school, and

in other elementary schools those standards should attend the nearest intermediate school, but it was pointed out that if children were transferred from the smaller schools when they reached the sixth or seventh standards, to the intermediate schools, the provided schools would lose the grant which they would be able to earn were they to continue in the school. It was decided to make an estimate of the cost of the proposal.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Voltaire, Select Letters. Edited by A. E. Thouaille. 40 pp. (Blackie.) 4*d.*—We are inclined to regard this as the best volume that has yet appeared in Messrs. Blackie's "Little French Classics." The note on Voltaire is capital, the letters are very well chosen, the notes are quite good, and the proofs have been most carefully read. We congratulate the editor on a modest but thoroughly satisfactory piece of work.

Lectures et Conversations Françaises. By W. T. Hartog. viii. + 126 pp. (Rivingtons.) 2*s.* 6*d.*—This book consists of twenty-five pages of *Anecdotes*, twenty-four pages of *Morceaux choisis de l'histoire de France* (including passages from V. Hugo, Lamartine and Michelet), twenty-two pages on *La France* (from Charleville, Zola, Turgot, &c.), and thirteen pages of *Poésies* (Lafontaine, de Vigny, Chénier, &c.); then there is a map of France and a plan of Paris. The Second Part consists of questions on the text in French (these should have been numbered), and grammatical exercises (which might have been more copious). On the whole, it is a very satisfactory piece of work. There are very few slips in the printing (*e.g.*, *connait* on p. 6; *avec* has dropped out on p. 42, l. 36; *anné*, p. 60).

How to read French. By H. Blouet. 77 pp. (Relfe.) 9*d.*—The first few pages are given to some very unscientific hints on pronunciation, *e.g.*, "the vowel *é* with an acute accent is always sounded like the letter *a* in the English alphabet." There are some reading lessons to practice the sounds; and then some anecdotes, which are not ill chosen, but disfigured by a number of misprints. The vocabulary is incomplete.

George Sand, La Mare au Diable. Edited by L. R. Gregor, Ph.D. xiii. + 152 pp. (Ginn.) 1*s.* 6*d.*—The editor supplies a mediocre introduction, good notes (not too obtrusively "American") in which particular attention is given to the English renderings, and a satisfactory vocabulary.

Classics.

A First Latin-English Dictionary. Compiled by A. C. Ainger. 212 pp. (Murray.) 2*s.* 6*d.*—It is a laudable motive to attempt to supply a dictionary which may take the place of the special vocabularies now usual in schooolbooks, but Mr. Ainger has not been quite successful. We find no fault with the contents of the vocabulary, which includes practically all the words which a boy is likely to meet with in the earlier stages, and the words are not overloaded with meanings. So far, good; but there are serious objections to the marking of quantities as Mr. Ainger understands it. Scholars are now generally agreed in America, and in this country they are gradually becoming agreed, that *all long vowels ought to be marked*, including those whose quantity is concealed, a vowel not marked to be taken as short by nature. But Mr. Ainger has no principle in marking length. He usually, but not always, indicates the short vowels, now and then a concealed long, often other longs, but there is no safe guidance to be had in these pages. Thus we find the following words marked as reprinted here: *disc̆iplina*, *dŭbĭĕ* [sic], *dus mŏdo*, *dŭŏdĕcĕs* (but *dĕcĭēs*), *pā̆r* [sic], *pāndo* (but *plĕcto* a *plecto* are not distinguished in quantity). We should be glad learn where *pār* is scanned as a short syllable: *dubiĕ* is perha a misprint. The second vowel *-i-* in *disciplina* is never lon theoretically the syllable *-ipl-* may be long, but we doubt wheth any classical writer uses it so, and Ausonius or Sidonius is authority for the beginner. This fault makes the book almo valueless for careful teaching, and we hope it will be set righ

The Story of the Kings of Rome. Adapted from Livy. I G. M. Edwards. xv. + 64 pp. (Cambridge Universi Press.) 1*s.* 6*d.*—The University Presses have been for so lo pouring out school editions which were neither better nor wo than others that we hail with delight this evidence of intell gence. Here is a Latin reader, interesting in matter, qui simple in style, brief, and admirably printed with a go margin; it is quite the best school-book topographically whi this Press has produced, and a pleasing contrast not only to t illustrated editions of other publishers, but to its own Pitt Pre Series. We cordially recommend this little book.

Virgil: the Story of the Aeneid. vii. + 124 pp. *Josephus the Last Days of Jerusalem.* vi. + 124 pp. By A. T. Churc (Seeley.) 6*d.* net each.—Recently we noticed the publicati of Mr. Church's "Story of the Iliad" and "Story of t Odyssey" at sixpence each, and we are glad that the publish feel themselves justified in bringing out two more of the autho books at the same cheap price. Their merits are already w known, and they are admirably adapted to interest the yo and unlearned in classical lore. Especially now, when so ma attacks are made on the classics by friend and foe alike, and t ideal of education has become so sordid, such books as the are welcome as making some of the treasures of ancient litt ture familiar to a wide circle. The "Virgil" is illustrated wi outlines after Pinelli, the "Josephus" from Roman sculptur The books are well printed, especially the latter, which, bei not so long, is printed in larger type. We predict a large sa for these books, and they well deserve it. They may b specially recommended for "holiday tasks" in schools.

Edited Books.

The Gospel of S. Mark. (Revised Version.) By Sir A. Hort and M. D. Hort. xxviii. + 120 pp. (Pitt Press.) 1*s.* —This is a dainty volume in every respect, and the two maps contains are works of art. The introduction is very full, but arranged so carefully that it can be read with ease, and thorough modernity of the Editor's scholarship may be gue by his reference to Mr. Stephen Phillips's tragedy of "Her to explain a portion of the history of that misguided mona The notes, which divide each page with the text to which th refer into almost equal portions, are excellent, and many ref ences of the first importance are given, so as to direct be students and teachers to learned authorities for subjects li Demoniac Possession, Parables, Miracles, &c. Altogeth helpful, suggestive, clear, and valuable.

The Second Epistle of Paul the Apostle to the Corinthians. Dr. A. Plummer. xlii. + 156 pp. (Cambridge Universi Press.) 1*s.* 6*d.*—To all scholars the name of Dr. Plummer sufficient to guarantee accurate and reverent scholarship, a this recent volume of the well-known Cambridge Bible Schools and Colleges is well worthy of its place in this use and even brilliant series. This Epistle, as the Editor remar bristles with difficulties, and it may be said at once that Dr. Plummer concedes a view which previously he had condemn namely, that the text does consist of two mutilated lett welded together. This view is stated with some reluctance, with a full sense of its utility in solving the difficult but press

question as to what else produces the evident change of tone and temper after chapter ix. The introduction is full of matter, but a greater interest still resides in the notes, which are thoroughly practical, but, at the same time, brimful of scholarship and research. Four appendices deal with St. Paul's personal appearance, his apocalypse, his "thorn in the flesh," and his rhetoric, of which the last is intensely interesting, particularly to those who allow S. Paul's transcendent claims as an Apostle, and yet discount some of his eloquence on account of his temperament.

Stories from Chaucer. By C. L. Thomson. i. + 216 pp. (Horace Marshall.) 2*s*.—The audacity of the paraphrases is abundantly justified, and whether used as a recapitulation of or as an introduction to Chaucer, the little volume could not be improved upon. Some of the ever-interesting Ellesmere illustrations are included (a folding copy of Stodhart's Pilgrims would have been delightful), and the illustrations by Miss Marian Thomson are enough of themselves to lead a child to love the old-world tales. There is no appendix, and there are but half-a-dozen notes. Others have tried to paraphrase Dan Chaucer; but nobody will try after this, we think.

Chaucer's Knight's Tale. By A. W. Pollard. xxx. + 182 pp. (Macmillan.) 2*s*. 6*d*.—Mr. Pollard's methods as an editor of Chaucer are well known, and his learning is appreciated among scholars as it deserves. The present volume however, seems a little more profound than a school edition should be. The special task the editor has set himself is an examination and illustration of Chaucer's indebtedness to Boccaccio in writing this poem. With this end in view we will not say that Mr. Pollard becomes painfully minute, but he certainly displays a terrible apparatus of scholarship, and, if we might venture to repeat it, seems to take his subject quite out of the region of class teaching. The introduction, for instance, is a joy to a scholar; it may be questioned whether it would appeal in the same cheerful way to the average boy or girl.

History.

Historical Studies. By J. R. Green. viii. + 365 pp. (Macmillan.) 4*s*. net. *Stray Studies* (Second Series.) By J. R. Green. viii. + 276 pp. (Macmillan.) 4*s*. net.—These two volumes consist of various reviews of books and other articles by the late historian of the English people, now reprinted mainly from the *Saturday Review*. It is needless to say that they are both readable and instructive. Most of them are "historical," generally referring to the Middle Ages. There is much of municipal history, but the range is varied, and it includes articles on London, East-end Life, and on Evenings at Home. The only misprint which we think may mislead is the omission of inverted commas to the titles of two books on p. 64 in the first of these books.

English History Reader. By E. M. Wilmot Buxton. vii. + 230 pp. (Skeffington.) 2*s*.—This is a pleasantly written and generally correct reader of English History from Julius Cæsar to Edward VII., gliding gently over the usual events. Of course there is almost no constitutional history, and modern times are scantily treated, but the church history has more than usual prominence, and social events are by no means neglected. There are a few pictures, and lists of words for spelling at the end of each chapter.

Mnemonics for Dates. By "Pilot." 22 pp. (Relfe.) 6*d*. net.—Sentences are supplied by which dates, mainly in English history, are supposed to be learnt more easily than otherwise. For ourselves we prefer sheer memory or association.

Growth of the British Empire. By M. B. Synge. vi. + 235 pp. (Blackwood.) 2*s*.—This is "Book V." of "The Story of the World." It is more historical than previous books of the series, and tells not only what is implied in the title but the story of the Crimean War, the Civil War in the U.S.A., and even such foreign matters as Mexican and Hungarian history, besides the wars of Prussia against Austria and France.

The Romance of the Civil War. By A. B. Hart and E. Stevens. xiv. + 418 pp. (Macmillan.) 3*s*. 6*d*.—This is "No. 4" of Source-Readers in American History. It has many illustrations and will prove a delightful book for the school library. The selections, which are from various sources, are grouped into eight parts, and introduce the reader to many of the more interesting phases of the great American Civil War as well as of the social conditions which made that contest inevitable. The only lack is that of an index, but it is a book which would be difficult to fit with that desideratum except on a very large scale.

Social Life in England, Vol. II., from 1603 to the present day. By J. Finnemore. x. + 235 pp. (Black.) 1*s*. 6*d*.—We have previously had occasion to praise Mr. Finnemore's books, and this latest production of his sustains his reputation. It is a trustworthy description of English social life in the seventeenth and eighteenth centuries, with nearly sixty good illustrations and a list of events. It makes a capital historical reader.

Science and Technology.

Animal Studies. By D. S. Jordan, V. L. Kellogg, and H. Heath. viii. + 459 pp. (Appleton.) 5*s*. net.—In this book the authors have attempted to meet the demand for an elementary zoology considering animals in relation to their environment rather than from a morphological point of view. In the first eighteen chapters—a little more than half the book—the great phyla of the animal kingdom, with their principal classes, are described in language simple enough for beginners yet with a care which will appeal to advanced students. In the remaining chapters the authors treat of the wider questions of biological philosophy—life and death, the struggle for existence, adaptation, animal communities and social life, protective resemblance, instinct and reason, and kindred topics being discussed with rare lucidity and breadth of grasp. The book contains a few flaws. For example, on p. 167 the notochord of the Lancelet is wrongly described as cartilaginous; the statement (p. 170) that "the Dipnoi must be regarded as an ancestral type, an ally of the generalized form from which Amphibia and bony fishes have descended" is, we think, somewhat misleading; and calcium carbonate is repeatedly referred to as "lime." There is also occasional carelessness of expression, *e.g.* (p. 225): "Protective colors also prevent detection, but if close pressed they rise into the air with a rapid whirring of their stubby wings;" while wrong punctuation has a weird effect on p. 87. These lapses are not, however, to be regarded as in any sense typical of the book's quality. From first to last the volume is of absorbing interest and high educational value. It is, moreover, well printed and richly illustrated.

Eton Nature-Study and Observational Lessons. By M. D. Hill and W. M. Webb. Part I. xviii. + 155 pp. (Duckworth.) 3*s*. 6*d*. net.—There is much useful and interesting material suitable for teachers who give object lessons in this book, and also a large number of excellent illustrations, but the haphazard arrangement of the contents detracts greatly from the practical value of the volume. The alternation of chapters with "observational lessons" results in some incongruity. Thus, a description of the migration of birds is followed by a lesson of two parts—the first dealing with a seed pod and the second with observations of the sun's altitude; a chapter on spiders' webs and chrysalis hunting is succeeded by a lesson on the fa of a

sycamore leaf. Some of the directions, too, seem hardly practicable. For example, under "preparations for work" in a lesson on the horse, we read "the loan of a horse must be obtained and the first part of the work carried on in an outside enclosure." Yet the discreet teacher may consult the book with the certainty of obtaining many valuable hints.

Illustrated and Descriptive Catalogue of Chemical and Scientific Apparatus, &c. (F. E. Becker and Co.) Gratis to science masters.—We have seen no more complete and no more conveniently arranged catalogue than this one. The illustrations are excellent, numerous, and are printed side by side with the descriptive text they explain. The science master who cannot find what he wants in these 512 pages will indeed be hard to please

Mathematics.

Elementary Geometry of the Straight Line, Circle, and Plane Rectilineal Figures. Part I. By Cecil Hawkins. viii. + 178 pp. (Blackie.) 2*s.*—The range of this book may be briefly described as that of Euclid's first four books (exclusive of his second book), but Euclid's order is not adopted, and propositions are included that do not occur in Euclid's text. Extensive use is made of the principle of symmetry, both central and axial. The best part of the treatment seems to us to be that in which symmetry is involved; though proofs from symmetry may cause difficulty to the examiner, they are both instructive and suggestive from the pupil's point of view. The rotational method of finding the sum of the angles of a triangle is adopted, and this plan allows the theorems on parallels to be treated without the use of Euclid's axiom or Playfair's modification of it. In carrying out this treatment the first part of Euclid's 28th proposition is made the *definition* of parallel straight lines; Euclid's axiom is proved by a method that involves the axiom of Archimedes, but the author, we think rightly, does not consider this proof suitable for beginners. In spite of the ingenuity with which the method is developed, we decidedly prefer that of Euclid with Playfair's axiom; the latter seems to us to be much simpler, though, if the rotational method of establishing the sum of the angles of a triangle be adopted, we think the treatment of parallels on the lines here followed to be quite satisfactory. The book, as a whole, shows much independence of treatment and is provided with good sets of exercises.

A School Geometry. Part IV. By H. S. Hall and F. H. Stevens. ii. + 213 to 240 + ii. pp. (Macmillan.) 6*d.*—This part contains the substance of Euclid's 2nd Book, and Propositions 35-37 of his 3rd Book. The authors steer a middle course between the Euclidian and the algebraic treatment of theorems on areas, and show good judgment in the selection of their illustrative examples. We think a proposition corresponding to the equation $(a-b)\,k = ak - bk$ should be introduced after Theorem 50 (Euc. II., 1), and that the proof of Theorem 52 (Euc. II., 7) would be more intuitive if the square on the produced part BX were drawn *above* BX; both of the rectangles AX.XB would then be completely seen.

The Principles of Mechanism. By Herbert A. Garratt. viii. + 166 pp. (Arnold.) 3*s.* 6*d.*—The book is divided into two parts. Part I. treats of the Kinematics of Machines, Part II. of the Dynamics of Machines. A somewhat extensive range of subjects is compressed into these pages, and brevity has at times been secured at a cost that the learner may perhaps think too high. For pupils, however, who have some practical acquaintance with machinery, and who have the guidance of a teacher, the book should form a useful compendium, and such as we gather from the preface, is the aim the writer has in view

Miscellaneous.

Notes on Analytical Geometry. An Appendix. By [illegible] Clement Jones. ii. + 172 pp. (Clarendon Press.) 6*s. net.*—For students who have had a first course in analytical geometry these notes will be very attractive. There is not, perhaps, very much that is new in them, but the treatment is fresh, and the style is simple and clear. The text consists of six chapters. The first five treat of the straight line, the parabola, the ellipse and the hyperbola, and throughout the discussion the representation of a point on a conic by means of a single parameter is predominant, while the equation of the straight line is frequently used in the form so common in solid geometry. These chapters form a very useful appendix to the usual text-books. The sixth chapter deals with cubic curves, mainly unicursal curves. In § 45 the functions f_1, f_2, f_3, should be stated to be *rational* functions of the parameter λ; it is implied indeed in later sections that they are rational, but the property should have been distinctly stated. The first paragraph of § 47 is expressed somewhat awkwardly, but the chapter as a whole is clear and well within the reach of the student, and forms a much needed addition to elementary analytical geometry. A good collection of exercises to the number of 217, with answers and hints to solutions, closes the book. It probably lay outside the scope of the writer, but we think that a discussion of the graphs of several of the equations would have added to the value of the work. Analytical geometry is too apt to become analysis without geometry.

Essays and Addresses, 1900-1903. By the Right Hon. Lord Avebury. 296 pp. (Macmillan.) 7*s.* 6*d.* net.—The charm of Lord Avebury's style, his versatility, and the accuracy of his knowledge, will ensure a welcome for his new volume. Not only is education dealt with and an earnest plea for a larger attention to modern languages and science in our systems of education made, but the reader's attention is directed to subjects as different as "our fiscal policy" and "the study of nature"; "bank holidays" and "Huxley's life and work." Whether Lord Avebury is praising the beauty of Ruskin's word-painting, advocating the earlier closing of shops, or moving the adoption of the report of the Churchman's Union, his remarks are always notable for their broad catholicity and for their genial culture. We heartily commend these essays and addresses to the notice of schoolmasters and schoolmistresses.

The Schoolmaster's Year-book and Directory, 1904. ix. + 540 + 490 pp. (Sonnenschein.) 5*s.* net.—Every schoolmaster should see that he has easy access to this work of reference, for the book is fairly described as "indispensable." The review of the year, with which the volume opens, provides an excellent bird's-eye view of the educational advances which characterised 1903; the number of schoolmasters of whom biographical particulars are given in the Directory is now over 9,000, an increase of 1,500; and the list of secondary schools for boys contains 1,200 schools, 200 more than last year. We are disposed to think that the section of the Year-book dealing with the books of the year might very well be omitted in future editions. Sufficient provision for the review of books is already, and a complete list of school books published during the year would be more valuable than short notices of some of them. The work is, however, an admirable one, and the editor has evidently devoted much thought and labour to its preparation. We hope that the volume will become a [illegible] annual, and that it will soon be found in the common room of every school and in every educational centre.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Need of Co-operation between Humanists and Realists.

It seems, perhaps, paradoxical to ask one who is a "type" of those who "bar the path of educational progress . . . from sheer lack of understanding and sense of proportion," to oppose so formidable a champion as Prof. Armstrong. However, I must at least make the attempt—*impar congressus Achilli*, if classical quotations are now lawful.

The action of the University of London in initiating a scheme of "study in the Humanities," from a sense that "some effort should be made to encourage them in the interests of a liberal education," seemed to me a very noteworthy fact, and in connection with it I reasonably referred to what Sir W. Anson recently called "a general trend of everything in the direction of scientific education," and also to the grave danger of such education degenerating into mere technical training in the use of tools.

Of such training which only "fits men to supply their material needs," I remarked that, "unless supplemented by other studies, it was imperfect and even ignoble." Prof. Armstrong, however, thinks that this shows that I cannot reason. "How," he asks, "can training which fits men to supply their material needs be called ignoble?" But such a question is purely rhetorical, for I only called this form of training "ignoble" when it is made the sole or chief means of education, and that is obviously legitimate. There is nothing ignoble about cooking, but to educate girls only in cookery would certainly deserve the epithet.

Prof. Armstrong seems, however, to suffer from a prejudice common among scientific men. He cannot understand that a student of literature may possess sense. And yet, on his own principle of experiment and observation, surely the opinion of a master who has witnessed many thousands of experiments performed on a vast number of subjects ought to carry some weight. But it does not. When I speak of science as now "an essential, perhaps the most essential, part of education," he says that I am "forced" to concede this, as though the concession were made grudgingly, whereas it was made gratefully, by one who, with long experience, has learned to understand facts. Again, when I plead earnestly against one-sided education—the bane of public schools—and claim that literature, mathematics, and science must all be combined, he indicates astonishment at such "an admission from so 'inhuman' a quarter." Why "inhuman?" Why hint that when a classical master talks sense the performance is as extraordinary as one that recently created such interest in Paris and at the Hippodrome? It is really not impossible that a man may love letters and yet appreciate, admire, and even study science. The name of Aristotle is not unknown either to polite learning or exact science. The panegyric which Tyndall pronounced upon Lucretius still deserves study. Nor can I forget the noble words in which Virgil deplores his own incapacity:

Sin has ne possem Naturæ accedere partes
Frigidus obstiterit circum præcordia sanguis,
Fluminа amem silvasque inglorius.

The value, indeed, of the study of science and scientific method is beyond question. No sane man can have any doubt about it. It is a very different matter when Prof. Armstrong urges that "the teaching of mathematics should be made incidental to the experimental work," and when he depreciates "bookish" study in order to emphasise the importance of "manual" training. Of mathematics I write as a tyro, but when I see boys playing with compasses and making fly-cages out of equilateral triangles I envy their happiness, but should have despised this method of learning as infantile while still in my teens. To put aside, too, all that wealth of knowledge which is our best heritage from an immemorial past because the study of it is "bookish work" is deliberately to deprive us of all the advantage we have over our forefathers and to put the utmost check on human progress. Nor can anything better be said for those who maintain the paramount importance of "manual" training, for their view rests on the supposition that it is more vital to "cultivate the use of the fingers" than the use of the brain—a view which receives the support of all lazy boys, but which hardly agrees with the *dictum* of a great poet and a great scientific observer, "*Handeln ist leicht, denken schwer.*"

Here, however, I must pause. I only ask Prof. Armstrong before he wholly condemns classical study to read this statement which is to be found in an article on "Technical Education in Germany," published in *The Times* of December 9th: "Of the candidates recently examined for the position of State engineer the proportion was—from gymnasia, 70 per cent., from real-gymnasia, 27 per cent., and from real-schools only 3 per cent." To those who can distinguish between fact and theory such a statement is worth a volume of essays.

T. E. PAGE.

Charterhouse.

AT the request of the Editors of this Journal, I have great pleasure in contributing a note under the above heading. I believe in the possibility and the fruitfulness of co-operation between Humanists and Realists, and I welcome the scheme announced by Mr. T. E. Page for the co-ordination of educational effort; for I cherish the hope that the ideals of Humanists and of Realists may not be found so irreconcilable, when you come to close quarters with them, as they appear at first sight. At the time of the Renaissance they were not thought of as incompatible, and I see no essential incompatibility between them; though, of course, a construction may be put upon the term "Realist" which may introduce an incompatibility. But we must get rid of one prepossession. It seems to be assumed as a datum that there is one best type of education and one best type of school suited to all boys and girls. Up to the age of leaving school, it is constantly urged from both sides of the controversy, there should be no "specialisation." I venture to think, on the contrary, that the true solution of this question, and of other closely connected questions, lies in the frank recognition of different types of schools meeting the needs of different types of mind, and preparing for different vocations in life. Only the word "vocation" must have a proper connotation assigned to it. In no vocation does man live by bread alone; but it does not follow that the same mental pabulum, whether cereal or non-cereal, is suitable for all vocations. "Specialisation" is an ugly word, and we are sufficiently familiar with the evils which result from a narrow and narrowing curriculum, whether merely "classical" in the old-fashioned sense or merely banausic. I would, therefore, prefer to speak of "concentration." Can it be seriously maintained that it is desirable for all boys and girls up to the age of eighteen to spread their energies impartially over the whole field of the possible school subjects? Such is not my experience. While, on the one hand, it is clear that no pupil should leave school without some touch—some living touch—with what Prof. Armstrong calls "Science" (under which he includes mathematics) as well as with letters, it is also clear to me that a pupil may do well, during the later part of his or her school career, to cultivate one of these "sides" more than the other. Most pupils

have some special bent—comparatively speaking—if only they could find it out, or have not been artificially stunted. And to cultivate this bent is, I am inclined to believe, the best way to develop his or her mind as a whole. But this necessarily involves different types of schools, or different "sides" of the same school. If it is said that time does not permit of such a programme being carried out without the sacrifice of some of those things which it is disgraceful not to know, I am inclined to doubt the fact. Cases have come within my knowledge in which boys of sixteen have found time to acquire a competent knowledge of Latin, English, French, and history (up to matriculation standard) and yet have devoted their best thoughts for two years to physics and chemistry, with the intention of making these subjects the ones on which to gain an open scholarship at a university some two years later. Such a curriculum, I maintain, is not liable to the reproach of one-sidedness. And, *mutatis mutandis*, what reason is there why a pupil who substitutes Greek and Latin for physics and chemistry should not find time, in the course of his school career, for a reasonable acquaintance with science and English subjects? Every German gymnasiast does it, and I dare say many English public schoolboys also; and I am not sure that, from the purely examinational point of view, as gauged, say, by an open scholarship examination in classics at Oxford, such an education does not "pay." Time might also be found for "manual and physical exercises," the reaction of which upon the purely intellectual faculties is, I fully believe, admirable; though I am not prepared to assign to them, with Prof. Armstrong, "half of the school time," even in the very earliest years of school life, to say nothing of the later stages.

What I would be understood to be pleading for is what I may call specialisation on the part of the school, and concentration of effort on the part of the individual.

The University, Birmingham. E. A. SONNENSCHEIN.

IT is a hopeful sign to find Prof. Armstrong accepting Matthew Arnold's ideal of a liberal education. Mr. Page could hardly have given fuller recognition to the importance of scientific study, while holding that something more is also necessary. Prof. Armstrong, in his letter, goes so far as to say, "there is really no great difference of opinion among us," and to plead that all should work together to a common end.

It has always seemed to me desirable that classical boys should have some manual training, and should at an early stage of their education acquire not only some knowledge of the world about them, but some short training in correct methods of observation through botany, or some other science. The literary side of their education will not suffer, but be all the richer for their personal contact with nature. Unfortunately, too many classical boys are *not* "tool-using animals," and some practical training in the use of tools and in delicacy of manipulation would not only render them more capable men, but provide them with opportunities for interesting recreation after severe mental work. I desiderate manual training and some scientific study for those boys not because these will help them to make a living, but because they will enrich their lives, organise an important part of their nervous system, and react on their whole mental development. They seem to me part of a liberal education.

But Prof. Armstrong must remember that manual training has not been altogether neglected in our schools. There have been excellent results produced by cricket, fives, tennis, and other free games, in the direction of the training of the hand and organising the motor brain. And there have been workshops in most of our best schools for many years. It is perhaps true that the boys who for physical development most needed the manual training have often had few opportunities fiting by it. This, it is to be hoped, will be so far r that no boy shall, in a good school, fail to receive at leas manual training.

May I emphasise in this connection the fact that training, to a considerable proportion of the populati especially to the great majority of those who pass secondary and public schools, is really *not* "a trainin fits men to supply their material wants." What t needed at the Bar, in the Church, in education, in jou in the various branches of the Civil Service, in the c spheres within the City, where men of fair education ea bread?

If the argument about "usefulness" of the practi money-producing kind is to be pressed, it will tell *against* than *for* the devotion of much school time to training and science, in the case of the majority of many schools. If a boy is going into the Civil Ser example, it will be more "useful," in this narrow s devote all his time to classics, mathematics, an "bookish" work.

The fact is that something of manual training and of s knowledge is needed, even from the modern humanist of view. Prof. Armstrong has been fighting sturdily f science and better methods; but he admits, or implies on that language, literature and music have their proper pl curriculum which aims at providing a liberal education.

There is an educative or disciplinary value even in that bear upon the economic needs of life; and there is, other hand, a practical value for a successful career those humanistic subjects which the man of science has apt to despise. Different types of school are needed the requirements of our complex civilisation, and the pr of the humane and the practical subjects in the curriculu vary according to the aim and purpose of each school. school can lose sight of the fact that it has to produce citizens, or afford to neglect entirely either the huma practical, or the scientific side of education.

In pleading for co-operation Prof. Armstrong might l his fighting weapons at home, and omitted from his le unnecessary and unjustified attack upon Mr. Page. Th was most generous in his concessions to science, and the words of his article must find wide-spread approval. S and practical training is necessary for some, and desirat certain extent, for all, but "it is not enough," and r "be supplemented" in various degrees by other subject

It may be worth while, in view of Prof. Armstron about "principles of evidence and reasoning" and his of illogicality, to look briefly at one or two points letter.

(*a*) Does this sentence of his contain a logical arg "If the teaching of the fundamental principles of e and reasoning belong to the Humanities, then is ' one of the most humanistic of studies."

On the same line of reasoning, would not the fo hold good: "If carbon is a constituent of sugar, charcoal one of the sweetest of substances"?

(*b*) Again, when Mr. Page says: "'That man sh live by bread alone' is a law not only of revelation Nature," is there any logical value in Prof. Arm answer, "It seems to me to be a law of Nature cannot live without bread"?

(*c*) Is Prof. Armstrong consistent when he says time, "We must settle what are necessary subject we must insist on these being taught *thoroughl* at another time, "In learning the mother tongue, pology, geography, grammar and history should be

incidentally"? Can any subject be *mastered* incidentally? and is scientific method of so little value that it need not be used in teaching these subjects?

(*d*) Take this other sentence—"The teaching of mathematics should be, as far as possible, *incidental* to the experimental work, so that it might always be obvious that the subject is in reality a *useful* one." Here, again, is it possible to combine "incidental" methods with thoroughness; and is Prof. Armstrong really prepared to hold that a training in mathematics is not "useful," in the best sense, apart altogether from experimental work?

Is a training "useful" only if it helps us to make machines, and not "useful" if it merely gives us a well-disciplined power of concentration and reasoning? The late Prof. Fawcett held that a man who had gone through the wrangler course at Cambridge would make a better lawyer in six months than another who had pottered about a lawyer's office all his life. He believed in the higher "usefulness" of mathematics.

(*e*) I cannot see that there is anything in Mr. Page's article which gives ground for Prof. Armstrong's statement that he "*obviously* knows nothing of scientific method, and is most illogical."

It is surely a first principle of science to have facts as the basis of general statements, and Prof. Armstrong has not observed this first principle. Neither does the reasoning of his letter show that he is justified in criticising Mr. Page for being illogical.

JOHN EDGAR.

St. Andrews.

THERE is a fine touch of humour in Prof. Armstrong's choice of Matthew Arnold as a guide to follow in the paths of educational theory. In the hope that he may even yet be brought nearer to Arnold's goal, we can afford to pass by the astonishing reference to a great passage in Shakespeare as "Hamlet's mad description" of man—a criticism which a mere humanist would have shrunk from perpetrating. Verbal agreement about the ideal of a general liberal education is easy; in this case, unfortunately, sharp disagreement about means and methods makes it futile.

Without ranging over the wide field of controversy to which Prof. Armstrong by his recent utterances has invited the world at large, I should like to fix attention for a moment upon a single aspect of his letter. Under the stress of criticism Prof. Armstrong is passing from what I venture to call the pyrotechnic stage to something more practical. He began with denunciation and epigram. The method was of service to him, for it amused and certainly arrested attention. Here was a man speaking and writing on education, and he was not a bore! Besides, the British public chuckled to hear a professor gibing at teachers as dunces in the aggregate. It was undeniably funny, but, regarded as criticism, it was not illuminating. For one thing, modern education, like modern life, is very complex; and the panacea seems rather one-sided. The epithets "practical" and "unpractical" were lavishly bestowed, but the new curriculum was sketched only in outline, not worked out in sufficient detail to test it by current difficulties and requirements. To mention one only—examinations: how were these to be faced in the reformed schools of the future?

Now Prof. Armstrong's letter is interesting for some definite indications which it gives of this curriculum. Humanists "for their bookish work" will be allowed "at most half of the school time;" and the subjects in the ideal syllabus for the earlier years of school life are the mother tongue and the elements of scientific method. This is still a little vague: it would be helpful if Prof. Armstrong would develop it a little, would give us, say, a specimen time-table of a week's work in some recognised type of school. It is difficult to do this from his meagre data, and the mother tongue is a composite quantity, for it comprises anthropology, geography, grammar, and history, taught "incidentally" and not as specific subjects. Now one cannot plan it in this fashion:—

Monday 9—9.45. The Mother Tongue.
9.45—10.30. Carpentry.

And so on. The Mother Tongue (may I use capitals?) is so elusive. Even when narrowed down in the vulgar sense to mere language, it is fairly comprehensive; but when it is held to include anthropology, &c., &c.—and no smattering of these, for they are to be "mastered"—"mastered incidentally"—it attains to the dimensions of the infinite. If Prof. Armstrong would map this out for us in a homely form which we can follow, it would be interesting.

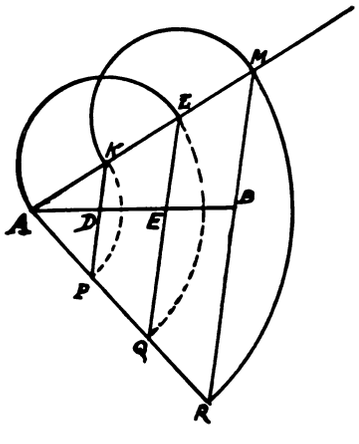
On the broad question Prof. Armstrong's crusade is to be welcomed. We may apply once more the trite formula that heresy is exaggerated truth. Only Prof. Armstrong's truth is very much exaggerated. But he has fastened on a weak spot, and for this we should be grateful. Overstrain is the pressing danger of our educational system to-day, and I believe a timely relief is possible in the direction indicated with such vehemence by Prof. Armstrong. I hope I shall not live to see his method running riot through half or more than half of the school time; but why should we not take a hint even *ab hoste*? Could we not in afternoon school concentrate mainly, if not exclusively, on subjects not bookish—on manual work, drawing, music, drill, swimming? I have known schools where this principle has been adopted, at least partially, with beneficial results. Schemes, of course, must be elastic, and a difference in the treatment of the various ages is all-important. Small boys one would like to see dismissed an hour before the others; the highest forms, whether we like it or not, are under existing conditions forced to specialise.

PERCY SIMPSON.

St. Olave's Grammar School.

To Divide a Straight Line into any number of Equal Parts.

THE following construction may be of interest to those who are engaged in teaching the New Geometry. It only requires ruler and compasses:—



Let A B be the line which it is required (*e.g.*) to trisect. Draw any line through A and on it mark off three equal segments AK, KL, LM. Let MB meet the circle with centre A and radius AM in R. On AR cut off AP = AK, AQ = AL, join KP, LQ. These will trisect AB in D and E.

Bangor. G. H. BRYAN.

Nature Study Exhibition at Swansea.

WILL you kindly permit me to state, for the information of those engaged in educational work, that the Bath and West and Southern Counties Society has arranged to hold a Nature Study Exhibition, in connection with its annual meeting at Swansea, in May next.

The remarkable interest—as shown by the number of exhibits and the attendance of visitors—manifested in a similar exhibition held by the Society, for the first time, at Bristol last year, justified a belief that the Society's annual migratory show might with advantage be utilised for bringing such teaching as goes direct to nature for inspiration under the notice of agriculturists and others.

The Society, therefore, through its Nature Study Committee, invites educational authorites and institutions to contribute for exhibition, collections, models, appliances, &c., illustrative of the subject in question, the desire being to render the exhibition as representative as possible.

I shall be glad to send full particulars of the exhibition to anyone interested.

THOS. F. PLOWMAN,
Secretary, Bath and West and Southern Counties Society.

4, Terrace Walk, Bath.

Mathematical School-books of 1903.

ON looking through your interesting list of the most notable Mathematical School-books of 1903, we are induced to put in a plea for the addition of "The Elements of Geometry," by Dr. R. Lachlan and Mr. W. C. Fletcher.

Judging from the notices of this book in the press, from private letters we have received, and from the material test of sales, we cannot help thinking it deserves no less honourable mention than you have accorded to others of the same class.

May we add that while we have been prompted to write to you by a desire to see justice done to our authors, it is entirely without their knowledge or consent!

EDWARD ARNOLD.

[The compiler of the list of mathematical books referred to writes: "Very many books on Geometry (even among those on modern lines) had to be omitted. I believe that I was made to overlook Lachlan and Fletcher's book by the fact that it has no date on its title-page; for I collected all those which I knew to have been published in 1903." EDS.]

MUTUAL AID.

THE object of this column is to afford teachers the opportunity of asking questions of and giving assistance to colleagues. The questions received to which replies are solicited will be printed first; following these will be the answers which have been sent in, and, to make such replies intelligible to all readers, they will be accompanied by the question.

The questions should deal only with educational matters, using the expression in a broad sense, and the publication or otherwise of any question must be left entirely to the discretion of the Editors.

Questions and answers should be addressed to the Editors of THE SCHOOL WORLD, St. Martin's Street, London, W.C., and should be accompanied by the full name and address of the sender, though not necessarily for publication. Each question or answer should be on one side only on a separate sheet of paper.

QUESTIONS.

F. B. Which is the best text-book on Church History from 313 A.D. to 410 A.D. for the use of pupils preparing for the Oxford Higher Local Examination?

E. R. Some parents complain that the home lessons giv are not sufficiently long and difficult. Would any High Scho teacher favour me with a schedule of "Home Lessons" appropriate length and difficulty for girls of average intelligen (age 13-15) for two days. The subjects taken are Engli history, geography, English, Latin and French to the Juni Oxford Local standards.

[We will forward any schedule sent to us.—EDS.]

E. W. M. I wish to obtain a list of the average performanc of boys of various ages in school athletic sports. If such figu are obtainable, perhaps some reader could tell me where to fi them. I shall be glad to receive any data—old sports card school magazines, &c.—from which to work out such averages

[We will forward any sent.—EDS.]

QUESTIONS WITH ANSWERS.

M. J. *Who publishes "Guide to the best Historical Fiction mentioned in "The School World" of April, 1902? And wh is its price?*

B. L. "A Guide to the best Historical Novels and Tales By Jonathan Nield. (Elkin Mathews.) 5s. net.

H. MANSFIELD. *In what book can I find an account contours and contour drawing, such, for example, as is requi in the physical geography papers of the Cambridge L Examinations?*

T. ALFORD. The only book I have been able to fi "Maps and Map Drawing." By W. A. Elderton. (Macmi 1s. Two useful articles by Mr. A. M. Davies were publ in THE SCHOOL WORLD, March and April, 1903.

E. T. THURSTON. *I want to acquaint myself with the co tributions Pestalozzi made to the science and art of educatio Are English translations published?*

R. SAMPSON. Mr. John Russell's translation of M. de Guimps's "Life of Pestalozzi" (Sonnenschien), 6s., help Mr. Thurston.

P. L. HENDERSON. *Can any teacher of English tell where I can find out what has been done in the way of teac composition orally and by the use of pictures?*

B. HUNTER. Mr. Henderson should try to obtain a co of Mr. Hartog's address to the North of England Confere at Leeds on January 8, 1904.

B. W. *Can any reader of "The School World" tell me wh is the best guide to the Civil Service, giving syllabuses of examinations, the number of vacancies yearly, and where to l for notice of them?*

F. EDWARDS. John Gibson's "Guide to the Civil Serv (Hodder and Stoughton), 3s. 6d.

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CHISHOLM, M.A., B.Sc., Sec. to Board of Studies in Geog- ıy, University of London. Dec. 22nd, 1903.

nuch obliged to you for the opportunity you have given me ıg acquainted with your system of teaching by means of the h, and I have no hesitation in expressing the opinion that m affords **opportunities of a peculiar and valuable kind** ting and instructing the young.

teaching of Geography much must depend on the careful selection eographs to be used, but I should add that many of those which d me to see **are admirably adapted to impart correct ideas** nt geographical phenomena. The mere fact that the effect of the ension in space is conveyed to the eye by the Stereographic s to it, in some cases, an essential advantage over the lantern , for the teaching of the young, it seems to me that the most advantage of the system which you advocate consists in the ch it supplies for testing and training the powers of observation t of the learners."

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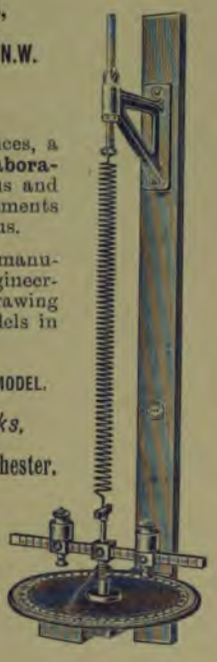

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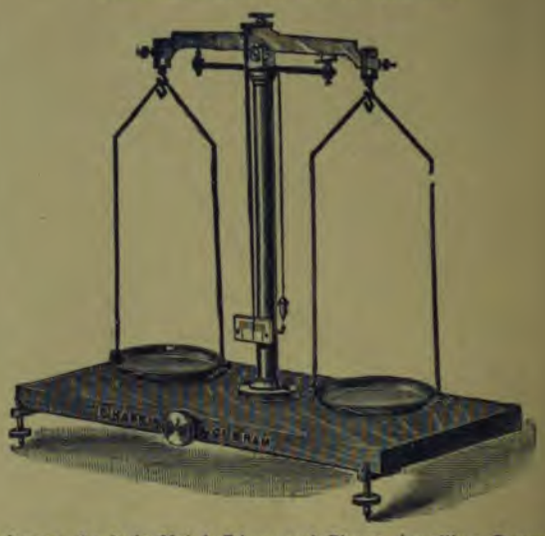

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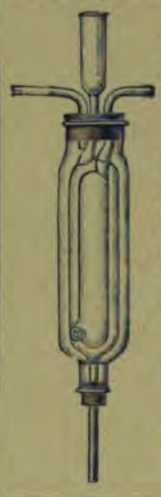

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No. 63. MARCH, 1904. SIXPENCE.

JUNIOR COUNTY SCHOLARSHIPS: A PROPOSED SCHEME FOR LONDON.

By R. P. SCOTT, M.A., LL.D.

Headmaster of Parmiter's School, and Chairman of the Teachers' Registration Council.

THE recent Education Act, now extended to London, has called up clouds of criticism which threaten to obscure for a time its great potentialities—potentialities far beyond even those of the pioneer Act of 1870, and destined soon, I venture to think, to be more fully and comprehensively realised, owing to the removal of all the statutory limitations which restricted the earlier measure.

Without wishing in the least to imply that the provisions of the present Act are incapable of improvement—for the contrary is certainly the case—I desire strongly to affirm that the bulk of the criticism to which the Act has been, and is being, subjected has rather a political and constitutional than an educational bearing. Such difficulties should therefore be dealt with in Parliament, and not in county councils and the like, upon which now devolve the duties of administration.

The controversies raised concerning the provisions in the Act which relate to "non-provided" schools ought no longer to be allowed to dominate discussion on the subject, still less to hide from view the bold outlines of a great measure. A great measure it is, and its real greatness consists in *unification*. It boldly sweeps away all needless diversity and all existing restrictions as to the various kinds of education which a local authority may provide; it proceeds to unify responsibility both for the financial and the general administration of all grades of educational institutions. The Act specifically charges each local authority with "the general co-ordination of all forms of education" within its area, and enjoins it to take such steps as may seem desirable to that end.

Thus the main educational object of the Act is on a comprehensive scale to start, and keep going, a series of linking operations, linkings between institutions, between teachers and between pupils. Each institution connected voluntarily or otherwise with the local education authority will have a definite place and work assigned to it by a body responsible for the efficient and co-ordinated working of the whole system.

Linkings of this kind cannot be accomplished all at once even by administrative decisions. Decisions will doubtless be necessary to give shape and coherence to the design, but the diversity of existing institutions must be frankly recognised, and the goodwill of individuals must be won in order that we may have not only a unified system, but one based upon the hearty co-operation of administrators and teachers.

The object of this article, however, is not to deal with the country at large, or with this subject of linking as a whole, nor to indicate the connections which might be set up between institutions or between teachers, although both of these problems are in some degree involved in what follows, but to restrict attention to the metropolitan area, and to indicate in what way pupils from elementary schools in London may be transferred to secondary schools with most advantage alike to themselves and to the community.

It is agreed on all sides that the present scheme for the award of junior county scholarships is in need of considerable revision. Since 1893, when such scholarships were established by the Technical Education Board, several changes—and some of considerable importance in this connection—have occurred, and cannot be ignored. In the first place, the school-leaving age for London elementary schools is now practically fixed at fourteen; and in the second, by decision of the Board of Education, pupil-teachers are henceforth to receive a certain portion of their education at secondary schools. Furthermore, ten years' experience of county scholarships has convinced schoolmasters and others that the age adopted for the transference of pupils from the elementary school—viz., 13 years—is too high for the scholar to receive the full benefit of the secondary school course, and also that such scholarships should be held, not as now for two years, but for four years.

The last two points have been recently and effectively put by Mr. Sidney Webb,[1] who has specially concerned himself with the "scholarship ladder," and whose views on education in London always command that attention which is due to a master of the subject.

It may be well, however, to indicate the evidence upon which professional opinion on these points is based.

If two school-courses are divergent, as the

1 "London Education." S. Webb. Longmans, 1904.

courses of elementary and secondary schools must be, the longer the transference of scholars from one school to another is postponed, the worse both for the schools and for the individual pupils. For instance, the subject of French is begun early in the secondary school, at ten years or before; the elementary school either begins the subject late or omits it altogether. In order, then, to fit into his place in French a junior scholar transferred to a secondary school at 13, he has to be classed apart, for a time at least, in this subject, and his progress, unless by exceptionally hard work and at the expense of other subjects, is seldom quite satisfactory.

In geometry and in science a somewhat similar difficulty holds, since, owing to different numbers in the classes and to the divergent aims of the schools, the beginnings of these subjects are differently dealt with. Even in history and geography the courses are in general dissimilar, although there seems less reason for the difference. Thus, in present circumstances, and *so far as the secondary school is concerned*, the year between 12 and 13 has been of comparatively little service.

This, however, is not all. The presence in the elementary school of junior scholarship candidates in some numbers has in many cases served unduly to divert the teaching into the examination direction, a modification fraught with disadvantage to class and scholar alike. The present scholarship system strains the teaching in the average elementary school, and in some cases leads to the undesirable formation of special classes. Thus, the scholarships being given wholly on the results of a written examination—a test not fully appropriate to such an age—the teacher directs much of his attention to prepare the whole class for such a test. The result in this case also is that, *so far as the elementary school is concerned*, the year from 12 to 13 has not been spent to best advantage. Moreover, one kind of merit, and one kind only, is at present rewarded, namely, that which does itself justice under the conditions imposed by written tests completed in assigned times.

Lastly, a uniform test of this kind, in affording no opportunity for an oral test, gives no place to a personal evaluation of the candidate's worth.

The foregoing reasons explain why London schoolmasters, alike in elementary and in secondary schools, would prefer that junior county scholars should be transferred in future at or near their twelfth, and not, as now, nearer their thirteenth, birthday.

As to the prolongation of tenure, it seems highly undesirable for scholars to leave before the normal leaving-age of the secondary school; moreover, a stay of four years is necessary if the traditions of the new school as to work, manners and conduct are to become a lasting possession.

But if it be unwise to award scholarships at 13 years solely on the results of written examinations, the unwisdom would be greatly increased if such a method were retained after the age for transference was reduced by a year. A written examination which is not without its defects for candidates approaching 13 years would l disastrous to the preparation of candidates earlier age. It will be necessary, then, to what workable plan could be substituted present method of a uniform written test.

I may perhaps be allowed here a brief sion as to the manner in which these nations have been conducted during the p years for the London County Council by ti Scholarships Board. Within the conditio termined by the age-limits as fixed, and diversity of instruction permitted under th obsolete Education Code, the examinatio ducted by the Joint Scholarships Board ha characterised from the first by smoothn working and by reasonableness of standard. has been due in large measure to the exce experience of its chief examiner (Mr. E Pinches), who has served the London Board in a similar capacity for several yea to the administrative capacity of its se (Mr. H. Bendall), whose organising abili successfully met every claim made upon it.

In any change in the award of schol which the working of the London Act involve, provision should be made that thi and successful experience shall be retained service of the county. This Scholarships has succeeded in bringing together under a comprehensive scheme a large number of L scholarships, awarded under somewhat di conditions on the results of the same exami These scholarships supplement the count vision, and every endeavour should be ma the new county authority to maintain the p connection between scholarship foundatio county scholarships.

Before dealing with any proposed met award it may be well to consider what ki junior county scholarships for boys[1] of twel desirable, and in what proportion the various should be made available.

As to the kinds, there should, I think, l one carrying free education only, and the carrying a maintenance allowance in ad For the former there should be no limit fi regards the income of the parent: for the lat present limit of £160 might be retained. N tinction in title should be made between th kinds: the distinction should be one of emolu not of honour. One advantage of this plan be to abolish the social badge—"Income £160"—which the Technical Education has devised in its zeal to reach a very des class. Another, and not a smaller, advantage be to increase the honour of being a county sc that honour ranks at present with what the u sities style "Close Scholarships;" the pla gested would invest all with the dignity "Open Scholarship," and talent would not present, be disqualified if the parental i shared perhaps by a large family has reach

[1] In the following remarks, wherever the words "boys" and " are mentioned, the words "girls" and "schoolmistresses" may stood.

forbidden altitude of three guineas a week. The incidence, in scholarship conditions, of a hard and fast income-limit, unless accompanied by some public provision of open, non-maintenance scholarships, has always seemed to me to cause as much injustice as it prevents. It appears to commend itself to the candidate for the popular suffrage, but it is unstatesmanlike in that it fails to achieve the main purpose for which scholarships ought to be awarded, namely, in the interests of the community to select the very best material for receiving the best education which this community can supply. In making awards under the restriction of an income-limit what should be an honour becomes a benevolence; and not the best material, but only the best *in the circumstances*, is made available for the service of the community. There are, in fact, two distinct aims in any comprehensive scholarship system, *both* of which ought to be kept steadily in view. The first regards the public money expended as an investment in brains—Sir Joseph Whitworth's munificent foundation was established with this as its chief aim, and the results have amply fulfilled his expectation—the other regards the expense as an aid to the deserving poor student. This is the chief aim of the "bursary" at the Scottish universities, and the results of this system through many generations bear convincing testimony to its wisdom. In London both these systems should be allowed free play, and each would act and re-act to the benefit of the other.

As to cost, all county scholarships should carry free education.[1] The maintenance charge to be paid for those whose parents' income does not exceed the assigned limit should be (say) £5, £5, £15, £15 for the four years respectively, the sum in the first two years representing clothes, the sum in the last two years providing in addition something to set against the wages which a boy between 14 and 16 might earn This latter item is not necessary for the years 12-14, since in general the scholar would otherwise have remained at the elementary school till 14.

As to the number of junior county scholarships to be awarded, it is evident that the present number of 1,200, *i.e.*, 600 a year, must be much increased, if the desirability of two kinds of scholarships, each tenable for four years, be admitted. But the issue by the Board of Education of its Memorandum on pupil-teachers compels attention to a wholly new problem. It is prescribed that intending pupil-teachers shall pass a considerable period of their school life in secondary schools; I would submit that the junior scholarships scheme should at once be made applicable to the requirements of the new situation. By an extension of the proposed scholarship system ample provision might be made for the selection and the training of pupil-teachers. If the number of scholarships were sufficiently large, no difficulty ought to arise as to the supply of pupil-teachers from among the scholars (and other pupils) of the secondary schools.

[1] All minor charges for books, stationery, &c., might well be paid direct to the school in an inclusive charge of (say) £1 per scholar per annum. The fees for public examinations should also be paid by the Authority.

It would, however, be necessary to award (say) 2,000 income-restricted scholarships, *i.e.*, 500 a year, and a like number of the non-restricted kind. If the present number of scholarships (1,200) were quadrupled the cost to the county would only be increased threefold, because while the present *average* maintenance fee of £10 a year is retained for half the number, on the other half no such fee is paid.

But whatever be the number of scholarships finally determined upon, the conditions of the London Act under which elementary schools are to be administered through Borough authorities, seem to require an allocation of scholarships *by Borough area*. Up to the present, there has been a very unequal distribution of junior scholarships through London. There are bright areas and dark areas in a London scholarship map as the appended table of statistics shows. Hampstead and Fulham are the former, Westminster and Southwark the latter. Such marked inequality ought surely to be removed under new conditions. To each Borough ought to be assigned a certain number of scholarships of the two kinds, and the arrangements for award, with the approval of the county authority, should be similar, though not necessarily identical, in each Borough.

The number of junior county scholarships should vary from borough to borough, according to the population, the number and size of schools, &c.; but this number, when fixed, should only be open to revision once every three years.

It remains to indicate what method might be adopted in each borough for the award of these scholarships, and what tests should be applied. In such award the public interests involved are three: the local education authority, which provides the money; the elementary school, which prepares the candidates; and the secondary school, which receives the scholars. All these are concerned to ensure that the right pupils are transferred; and, in my opinion, means should be taken to *unite the three in the determinative act of selection*. The steps I suggest are as follows: The county assigns (say) 120 scholarships, 60 of each kind, *i.e.*, 30 to be awarded each year, to a certain borough. The borough notifies that ten of each kind will be awarded in June and five in December; it further notifies that each elementary school may nominate, by May 1st and November 1st respectively, an assigned number of candidates, such number not necessarily being the same for each school, but varying according to size of school, its repute, &c., and determined by the borough education committee and further variable from year to year.[1]

This list of candidates should be sent to the headmaster of some approved secondary school in the borough area, with the request that he and one of his staff, together with an elementary schoolmaster and some examiner nominated by the county education committee, will conduct on

[1] A similar method has been adopted by Christ's Hospital for regulating the number of candidates allowed to sit from individual secondary schools for its scholarships.

behalf of the borough such written and oral examination of the candidates as shall approve itself to him and his colleagues, with the object of recommending to the borough committee pupils for election to the vacant scholarships.

On this examination committee the secondary headmaster would act as chairman and have a casting vote, the examiner nominated by the county authority would be the only paid member; his function would be to enforce, as far as may be, the maintenance of a sufficiently uniform standard of award throughout London; and the elementary schoolmaster, who should be nominated by the borough committee, would see that the tests applied, whether oral or written, were reasonable and sufficient. There should be no allowance for age,[1] the objects being to discourage special preparation, and to select as far as possible children of the same age for transference. No lists of marks should be furnished to the borough committee, and no order of merit issued, but each candidate should pass through the hands of each examiner, and the recommendations should be required to be signed by all the examiners acting.

As to the examination itself, the general plan would be settled by the examination committee and be approved by the county authority. The examination should be partly written and partly oral. Tests should be given in arithmetic, English, drawing and general intelligence. The arithmetic should include vulgar and decimal fractions and the unitary method, and special stress should be laid on quickness and accuracy in mental arithmetic.

In English the tests should be to reproduce clearly and in idiomatic language the substance of a story read out to candidates; oral paraphrasing, easy analysis and parsing by function; and, in particular, to read with intelligence and expression.

In drawing, the test should not consist solely in reproducing a copy. The test of general intelligence would be entirely oral, and would include questions on elementary physical and economic geography, on natural objects and phenomena and current events.

Once a year the Mayor of the Borough should hold a meeting at the Town Hall, at which, in presence of those interested in local and general education, certificates of honour should be awarded to the scholars of the year. The county annual scholarship function at Queen's Hall might well continue for other awards, but the junior county scholarships list belongs properly to the Borough; and the local stimulus which such a recognition would give to education can hardly be overstated.

Such a method of scholarship award as here sketched would obviously forward the linking of educational institutions within the various borough areas of which London consists. It would bring schoolmasters together on common ground and in honourable association; it would secure their sympathies in the same individuals; it would set up natural relationships between schools which serve the same community; and it would prepare fittingly for the closer linking hereafter when many of the scholars thus chosen would return as pupil teachers to their old schools, with a wider educational outlook than is possible now, and with a school allegiance doubled but not divided.

[1] The interests of children of late development ought not to be overlooked, but their case must be dealt with in some other manner.

LONDON JUNIOR COUNTY SCHOLARSHIPS (1896-1903.)

1 No.	2 Metropolitan Boroughs (including the City).	3 Population to nearest thousand.	4 Average Attendance: During 1901-2. Board Schools.	5 Voluntary Schools.	6 Total.	7 Total Scholarships gained. (1896-1903.) Boys.	8 Girls.	9 Total.
—	City	27	1,879	2,056	3,935	14	3	17
1	Battersea ..	169	21,576	3,742	25,318	87	67	154
2	Bermondsey ..	131	18,376	6,194	24,570	188	85	273
3	Bethnal Green ..	130	20,606	3,721	24,327	31	24	55
4	Camberwell ..	259	35,400	6,078	41,478	268	181	449
5	Chelsea	74	4,538	3,471	8,009	51	33	84
6	Deptford	110	13,558	1,314	14,872	111	87	198
7	Finsbury ..	101	11,967	3,437	15,406	71	51	122
8	Fulham	137	19,962	1,624	21,586	128	168	296
9	Greenwich ..	96	13,532	2,592	16,124	59	49	108
10	Hackney ..	219	26,758	4,862	31,620	187	111	298
11	Hammersmith ..	112	11,023	3,704	14,727	76	60	136
12	Hampstead ..	82	4,590	1,926	6,516	68	29	97
13	Holborn	59	2,333	4,164	6,497	14	11	25
14	Islington	335	36,008	7,683	43,691	226	215	441
15	Kensington ..	177	9,635	6,977	16,612	42	40	82
16	Lambeth	302	23,608	14,011	37,619	224	167	391
17	Lewisham ..	127	10,901	4,304	15,205	90	65	155
18	Paddington ..	144	8,008	9,826	17,834	54	20	74
19	Poplar	169	23,104	5,652	27,756	48	97	145
20	St. Marylebone ..	133	4,813	8,705	13,518	26	15	41
21	St. Pancras ..	235	19,185	10,508	29,693	193	137	330
22	Shoreditch ..	119	15,705	2,752	18,457	54	29	83
23	Southwark ..	206	27,417	9,100	36,517	30	14	44
24	Stepney	298	33,333	20,454	53,787	110	72	182
25	Stoke Newington	51	4,332	749	5,081	28	14	42
26	Wandsworth ..	232	21,761	8,371	30,132	179	101	280
27	Westminster ..	183	3,300	12,004	15,304	25	10	35
28	Woolwich ..	117	17,137	3,828	20,965	145	57	202
	Totals ..	4,536	463,345	173,811	637,156	2,827	2,012	4,839

NOTES.

(1) The figures in columns 7—10 inclusive are for 8 years; it will be noted more scholarships were awarded to boys than to girls, nearly in the proportion 3 to 2, yet in some districts the total number gained by girls exceeds those gained by boys.

(2) The average of scholarships awarded during the 8 years is 7·6 per thousand school children, or each year nearly 1 per thousand; the following averages noteworthy:—

12 *Scholarships and over* { Hampstead, 15·2; Fulham, 13·7; Deptford, 12·1; Chelsea, 12·0.

3 *Scholarships and under* { Marylebone, 3·0; Bethnal Green, 2·3; Westminster, 2·2; Southwark, 1·2.

This shows that the scholarships even with the income-restriction have failed to reach the poorest districts, the award coming at least a year too late. There are no available statistics as to numbers eligible or non-eligible under the income limit.

(3) It will be noted that the number in average attendance at non-provided schools exceeds that at provided schools in Westminster (2·2) and in Holborn (3·8), considerable in Stepney (3·4).

(4) Since the totals in columns 3 and 6 have varying proportions through London, the scholarship average (column 10) is based on school children and not on population. Westminster (183,000) has only 15,000 school children: these gained in 8 years 35 scholarships, *i.e.*, a total of 4 a year, or ·27 per thousand. Fulham (137,000 population) 21,000 school children: these gained 296 scholarships, *i.e.*, 37 a year, or 1·76 per thousand. Thus, for every scholarship per thousand gained by Westminster Fulham gained six.

SATURDAY SCHOOL AT ST. PAUL'S.

BY A HEADMASTER.

THE proposal to abolish the whole day holiday on Saturday at St. Paul's School has been rejected. No one laments its failure. Boys, masters, parents were dead against it. The medical profession, so far as it expressed any opinion, was decidedly adverse to it. Religious feeling, both Jewish and Christian, was all on the same side, for it was no less a menace to the Christian Sabbath than to the Jewish. The proposal is scotched, but it does not follow that it is killed. Marley is dead, but Marley's ghost may still walk the earth. As this was not the first time the idea had been broached at St. Paul's, so it may not be the last, and it may not be *malapropos*, even though the issue seems for the present decided, to set forth the reasons in favour of a whole day holiday on Saturday in City schools.

The proposal at St. Paul's was not, as it has been represented, simply a proposal to increase the amount of school-work; the object of the scheme was rather to distribute the school-work, as it was thought, more equably, and to combine with it more systematic provision than hitherto for physical training. The school hours are from 9.30 to 1, and from 3 to 5. The time is divided daily into three periods, two in the morning and one somewhat longer in the afternoon. At present the hour between two and three p.m. is free for games and gymnasium, and, over and above that, each boy gets one afternoon in the week for athletic exercises, the different forms taking different days in rotation, so that the best possible use may be made of the grounds, fives' courts, swimming bath, and other facilities with which the school is so splendidly equipped. The river is close by, and available after school and on Saturday morning. The whole system is splendidly organised. Exercise of some kind is made compulsory for every boy. There is a wide range of choice, and each boy chooses at the beginning of term which form he will pursue. Even bicycling is admitted under supervision of a master. This system is, in fact, almost a model; it shows what can be done in a day-school with a first-rate equipment to give City-bred boys almost, if not quite, as good a chance as boys get at Rugby or Eton. Accordingly St. Paul's has been pretty well as successful in athletics as in scholarship. There was an Old Pauline in each of the University crews the year before last; the Paulines hold their own at cricket or football against Bedford Grammar School, Dulwich, and Sherborne; they carry off more than their share of the prizes for boxing at Aldershot, and their general physique and bearing is most highly commended by Col. the Hon. John Scott Napier, who superintends and reports on the public school competitions at Aldershot.

Mr. Walker's proposal was to take away the Saturday whole holiday, adding two extra "periods" on the Saturday morning, and by way of compensation to give each form two extra periods, *i.e.*, three periods in all, during the rest of the week for physical exercises. During each period of the first five days of the week one-fifth of the school was to be playing games or drilling under one or more of the masters.

Now it is clear that no ground could stand the constant wear of games all day long and every day of the week; it is difficult enough under metropolitan conditions to keep turf in a fit state to stand play two or three times a week. The proposal meant, therefore, in practice, physical drill, or, to give it the technical term, "supervised physical exercise." The very idea of it is repugnant to an English boy. It may be all very well for German or French boys, who are organisable animals and more submissive to machinery, but the English boy, when he takes his exercise, likes to be his own master, he likes to do it *con amore* and throw himself into it with zest and animation. Both these natural boy instincts are blunted and coerced by "supervised physical instruction," and thereby the very object, at which that physical instruction aims, is thwarted. Nothing is more illuminative in this respect than the paper "On the Measurement of Mental Fatigue in Germany," which appears in vol. ix. of the Board of Education's Special Reports on Educational Subjects. The article contains the results of three different methods which were applied to measure mental fatigue. The results in each case go to show that an hour's work in the gymnasium, according to the German method, is almost as fatiguing to the mind as an hour's work at Latin or mathematics. Such "supervised physical instruction" affords apparently but little relief to the power of attention. There is nothing exhilarating in it, it is not sufficiently free and spontaneous, and consequently imparts no proper elasticity to the mind. Mosso strongly disapproves of devoting the intervals between the hours of work to gymnastics or drill, considering that "such a course only tends to further wear and tear of the nervous system."[1] Thus by the means of ergographs and æsthesiometers is nature justified of her instincts.

The scheme of physical instruction would have defeated its own object, because it would have made the games a matter of drill and school routine, and that would have taken all the heart out of them. It would have knocked on the head all match arrangements for the middle week, it would have seriously impeded the matches on Saturday afternoon, would have made a school crew impossible, and put an end once and for all to the "march out" of the cadet corps, the rifle practice of the shooting eight, and the whole day natural history rambles, of which St. Paul's School showed such admirable results at the Nature Study Exhibition two years ago. With these things would have perished not a little of that corporate spirit of school patriotism which is, it is true, a bye-product, but certainly not the least

[1] Special Reports, vol. ix., p. 587.

valuable product, of the school athletics and school societies which are so characteristic of English education.

The school work on Saturday morning would have meant an addition to the mental work of the Pauline. It was not so intended, but in practice it would have meant another evening's homework, and for the great majority of boys two more railway journeys. Few people, beyond those who have actual experience of London school work, know what sheer loss of time those train journeys involve. It is not an uncommon thing, as things are now, for boys to spend from ten to fifteen hours a week going to and from school. All this time is waste, and worse than waste. I imagine that Mr. Mosso's ergograph and æsthesiometer would prove statistically what most of us know in practice, viz., that an hour in a suburban train was about as fatiguing to the mind as an hour in a German *Turnhalle*. And if there is one day worse than another, it is Saturday: in the early afternoon it is not uncommon to find fifteen people travelling in one compartment, and the guard's van as congested with humanity as the rest of the train. Speaking generally, it is the cleverest and most promising boys who come from the greatest distance, attracted by the reputation of the school. These are the boys who would suffer most. Any addition to the travelling, whether on tram or train, is an addition to the tare, to the dead-lift or weight which has to be carried in addition to the cargo. It was Mr. Walker himself who introduced the whole day holiday at Manchester Grammar School, where similar conditions prevail, and no one there has questioned the wisdom of his action or desired to revert to the *status quo ante*.

It was one of the wise sayings of the late Bishop of London that the main business of education is not to enable people to get on, but to enable them to use well the time in which they are not employed in getting on. In other words, the real test of our education is the use we make of our leisure. Now, if we want a boy to learn how to spend money judiciously, we allow him some money to spend at his own discretion within certain limits. If we want to make citizens worthy of votes, we give them votes and make them responsible for the exercise of their privilege as voters. In the same way, if boys are to learn how to make right use of leisure, they must have a certain margin of leisure to use. It is possible, indeed certain, that many will make a bad use of their leisure. Some Paulines may lie in bed on Saturday morning; other people abuse their leisure by digging with toasting forks for hidden treasure. But the remedy for such abuse is to check it and show a more excellent way, not to take away leisure altogether: and the addition of Saturday morning school would destroy altogether the leisure of the City schoolboy. The shadow of the machine would be over his whole life; his real self, what the Latins called his "*genius*," would have no chance. It would not be easy for him in term time to fit in a visit to the dentist, the tailor or the hairdresser; much less would it be possible for him to prosecute a hobby of any sort. His music, his natural history his live pets, his carpentry or fretwork, his ches his photography, his sketching, his microscop his collection of whatever kind, in a word, all th little pursuits of his own choice, in which he take a personal pride, which show his real spontaneou self—all these activities would be at once impossibl during term time, and with them would go th freshness of mind and the savour of personalit which redeems life from the commonplace an gives to all the activities of life their best an choicest quality. Variety is of the essence happiness in work. With a free Saturday varie gets a chance, without it none. All good work done with joy, says John Ruskin, and through infini variation, says Darwin, is the law of progress. is an easy thing, fatally easy to men of organisin genius, to draw out and enforce a plan of life th will prevent all wasting and concentrate upon given objective all the powers of those under the control. It is quite possible in this way to attai a high level of attainment in certain specifie directions, but such a system does not and canno produce excellence, and the best work in scienc and in scholarship is done by minds which hav spontaneous impulse and have learned by freedo to use their own powers in the work of construc tive thought and research. The bow that i always bent, loses its spring and will not shoot s far. "Work and make music" was the principl of Socrates. "Work and make encyclopædias would have been the principle, underlying thoug unexpressed, of the new model of Thorough at S Paul's.

It is quite possible in education, as in oth things, to make an end of the means, and for th sake of education to lose all that makes educatio worth having. The miser, when young, desir money for the sake of the comforts which it w purchase for him in old age; when old age com he foregoes comforts still that he may add to h money store; the means has become an end itself, the primary object is nullified by the paras tism of the method adopted to secure it. So th end of education is complete manhood and woma hood, but it is quite possible to become so absorbe in education as to forget the end thereof, and t over-education to produce a dwarfed and stunt manhood in the end. And this is bound to happe if education leaves no scope for that silent but s important education which a child gives to itsel if we allow the activity of the teacher to encroac unduly upon the self-activity of the pupil, and s absorb the pupil's time by prescribed routine th this self-activity gets no chance for developmen Oversoul is better any day than overdriving.

This leads to the last consideration. A gre deal has been said on the religious aspect of th question for Jewish boys. St. Paul's has som 50-60 Jewish boys. To these the choice on Saturda would be "your religion or your work." And is unfair and un-English to confront a boy wit such an alternative and put a premium on apostas If there are to be classes at all on Saturday mor ing, they should be such classes as can easily t

missed without interfering with the regular programme of study—shorthand, drawing, practical carpentry and engineering, bookkeeping and laboratory work in physics or chemistry. Such is the practice already at University College School, and it is free for a parent to choose at the beginning of the term whether he wishes his son to attend these classes or not.

But hard as it would be on the Jewish boy, it would be still harder for the others, for it is better to have one day of rest in seven, even though it involves missing lessons, than to have no day of rest at all. And that is what it would mean for the Christian boys who did their duty both by the school games and the school work. After a hard game on Saturday afternoon, it is not possible to do justice to homework in the evening. The homework for Monday would be inevitably thrown over to Sunday. The problem paper of the boys in the mathematical eighth, the English essays and classical composition of the boys in the upper classical forms, tasks which are now done, or could be done on Friday evening and Saturday morning, would be done on Sunday, if done at all, and the *Daily News* taking a second religious census of the City would have to record 500 additional vacant sittings in the London places of worship. The St. Paul's boy would be cut off from religious influence and would form habits of non-religious observance. Dean Colet would hardly approve of this. The beginning of the week determines the character of the whole. The secularisation of Sunday means the secularisation of the week, just as the consecration of Sunday consecrates the six days of work that follow. But the observance of the day of rest is not founded on enactment alone, it is founded on a deep necessity of human life. It is observed because it is enacted, but it is enacted because it is necessary. The institution of the day of rest in Babylonia synchronises with the institution of organised work among mankind, and rest was enacted in the interests of work itself. Man, the greatest of all machines and the most sensitive, needs to be wound up, so that he returns to his work on Monday with renewed vigour and livelier spirits. And it is impossible to believe that what makes boys stronger and healthier and fresher in mind will ultimately make them less learned or less efficient. A boy may learn more in a single week by working seven days instead of six, but it is open to doubt whether at the end of a year he will have learned more by working seven days a week, even supposing his physique does not succumb beneath the strain, and at the end of six years he will certainly have learned less. It is by the ultimate result that such a system must be gauged.

The decision of the governing body of St. Paul's reject the proposed scheme is, in effect, a ory of man over machinery. The machinery ducation nowadays is making ever increasing mands upon the time and attention of the child. e subjects of instruction are more numerous and the boy is subjected to periodic examination almost from the day he leaves the nursery. Even in sports there is as much organisation as there is in the curriculum of study. This has its undoubted benefit, but it has its corresponding danger, and the danger is that real spontaneous life may be sacrificed to the demand of educational machinery, that the child may lose its individuality and have so much of its time and effort mapped out for it by superior powers that it may lose from sheer atrophy the power of mapping out its own time and determining the object of its own efforts. And this is precisely what the old Latin poet described as

"*Propter vitam vivendi perdere causas.*"

THE INSPECTION OF SECONDARY SCHOOLS.[1]

By AN ASSISTANT-MASTER.

THE march of events in secondary education is a very hurried one. On the administrative side change succeeds change with a rapidity which some of us fear may be as dangerous to the well-being of our schools as was the apathy of the past: after King Log, King Stork! And at the same time professional opinion, shy and conservative though it be, is adapting itself to the new conditions with hardly less speed. "It would be desirable," said the Royal Commissioners of 1895, "that [the Inspector] should also be present at the teaching of, at any rate, the principal classes. . . . But in view of the disquiet which a general enforcement of such a rule might at first excite, we are not prepared to say that this should be deemed essential." How completely out of touch the words are with present sentiment. Last year, the third year of the working of the Act of 1899, no less than ninety-five schools underwent a complete inspection under Clause 3 of that Act; and we have not so much as heard "the rumble of a distant drum," beaten by a disquieted malcontent.

The Commissioners and their witnesses recognised two types of inspection, which they distinguished as "official" and "educational." With the first we have here little concern, though at one point it touches, or ought to touch, assistant-masters very nearly. No doubt the administrative inspector, in all cases be it remembered an officer of the Board of Education, inquires into the salaries paid to the staff. These are always insufficient, and for that reason, we suppose, the information obtained is discreetly pigeon-holed at South Kensington, and no more said. But it is surely the plain duty of an Inspector to give the facts at least so much publicity as his report affords. We very well remember the commotion which ensued in a provincial town on the publication of an official statement that £50 a year "was not an adequate salary either for a man or for a woman."

Of educational inspection, again, there are two

[1] [An article on inspection from the point of view of a headmaster appeared in our December, 1903, number. An inspector will, we hope, deal with the subject next month.—EDS.]

kinds. As at present conducted by the officers of many local authorities, its object is to secure that grants of public money are not wasted through ineptitude or inefficiency. No attempt is, as a rule, made to examine into the work of individual teachers. If it appears that the school in question is endeavouring, with a reasonable prospect of success, to meet local needs, the purpose of the inspection is generally held to be satisfied. Many teachers are of opinion that inspection should never be stretched to cover more than this. In Thring's words, "the sole business of Government is to pass a school, first, as having efficient machinery for the work it professes to do; secondly, as doing that work on the average successfully." It is easy to understand, and indeed to sympathise with the objectors. An inspection which subjects curriculum, time table, teaching methods and efficiency, to a searching review, may be as powerful for evil as for good. It may destroy the teacher's originality; it may sap his sense of responsibility; it may end by making us all the mere tools and instruments which, *pace* Mr. Page, assistant-masters are as yet far from becoming. Yet equally certain are we that to the acting teacher an incomplete or superficial inspection is not worth a rap. To be of assistance to us our inspection must be complete, and must be thorough; and the inspectors must be carefully chosen. Of amateurs we have plenty. Even the Man in the Street is an educational expert in his own eyes, for he once suffered *sub ferula Orbili*, and has the jargon of the schools. But advice tendered from a full knowledge of the conditions under which it will have to be followed is as rare as it is useful.

Inspection, then, must be complete. Regard must be had to all the problems with which each master is faced, and to all those working compromises of which a school time-table is a symbol. Of the mischief that is done by external authority when it concerns itself with a single branch of the curriculum, and leaves the rest to shift for themselves, Mr. Headlam's recent "Report on the Teaching of Literary Subjects in Schools" furnishes conclusive evidence. While the example of an unreformed South Kensington remains the orthodox precedent in this direction, we may put aside as impossible of realisation the notion that education is a process of harmonious development. Yet the general level of education can no more be raised by laying all the emphasis on single subjects than a boy's bodily health can be improved by making him carry weights on his left shoulder.

The Inspector must be carefully chosen. Long and successful experience alone can give authority to his judgments. They say that after ten or fifteen years of general practice a doctor may set up as a consultant. An equally long apprenticeship to school work is surely not too much to demand of our would-be educational adviser. Inspection, we are told, "is a trade to be learnt, like other trades," and the implied inference is that the pupil must begin early. If we merely want *criticism the statement* may pass. One can be a good judge of pictures without knowing hold a brush. But such a critic may not p to give instruction in the technical details of Moreover, inspection as a "trade" would best parasitic; rather ought we to regard it department of our profession, and to enc the transfer of teachers to the inspectora even of inspectors to the master's desk. Tl might well swing both ways.

With what powers should an Inspec armed? The question is difficult, but Society, whose servant he is, dictates schoolmaster what subjects he will teac within the limits of the curriculum he al and ought to be, responsible. There is a which was realised under many of th School Boards, that between the teacher Authority employing him a second maste intervene—the Inspector. A sentence in th Board of Education Report illustrates the "No Inspector would think of pushing forward if he had not properly assimilat year's work." The author of that rema strayed beyond his province. Divide respon efficiency is at once impaired: remove re bility, and with it there goes one of the few which still induce able men to become masters. Therefore, the Inspector recommend and report, but should not be to intervene directly in the internal affairs school.

Now that we have appointed our Inspec will, perhaps, out of gratitude allow us to gi a few hints for his future conduct. He ma ask us in what way he can be most helpfu he comes into our class-room. In the first let him resist that inclination to magnify th details, the *anise and cumin*, which is the be temptation of his office, if one may judge frequency with which it is succumbed t cause a desk is not straight or a window not does not follow that a spirit of untidiness p the class, or that the ventilation is ge neglected. There was once an Inspect came to see a new laboratory, which the had designed and fitted up with elaborat and all he said was, "Some of those boy wash their hands"; and again, "That ta clean." In the next place, it is as well t interest in the business which is towarc though one cannot feel it. The first ti present writer was inspected he had to strate Euclid I. 44, while the Inspector wa and down examining the photographs whic on the wall behind the class.

On methods, modern and other, the las has fortunately not been said; and th attempts to dictate the way in which a should be treated are to be deprecated. S if the teacher knows his method and is fully following it. In a certain school present time the modern-language teacher, many years taught well, though after fashion, now takes the field with an arm *Lauttafeln and Bildertafeln*, and with di

results, in consequence of a youthful inspector's interference. One wonders what the gentlemen would have said to Bowen's famous lesson in French prose, which began with a list of the English archbishops and ended with the mouths of the Nile. Unhappily *our* Inspectors are not likely to meet many Bowens in their peregrinations, but most of us go about our business in our own way, and our "bent was taken long ago." Of our methods we can truthfully say, with the old stage-driver, that when there is a breakdown we know where we are; but if, in our age, we are forced to essay new modes of locomotion, there will be many breakdowns, and Heaven only knows where we shall be!

In teaching, more perhaps than in anything else, the *data* make all the difference. The human boy, the exigencies of time tables, the freaks of examining bodies, and a hundred other things, cause grievous rents in pedagogic theories. Moreover, in the round of the curriculum most of us are compelled to the variety of Dryden's Buckingham; we are not specialists with a single *rôle*. Criticism and suggestion which does not take account of all the parts we play and of the limits of the stage is predestined to miss its mark. "Censure us in your wisdom," therefore, Mr. Inspector, "and awake your censure that you may the better judge," but never pass sentence without giving an opportunity for a motion in arrest of judgment. No teacher worth his salt resents the question, "Why did you do so and so?" And then, the motion heard, if condemn you must, indicate the way to better things, and go out of your way—you will not have to go far—to find something you can praise. One recalls for your benefit *Punch's* lines to Carlyle:

> Wicked though the world may be!
> Don't regard us very sadly;
> Teach us better, Mr. C.,
> If you find us doing badly.

One other question remains before we come to the report, without some discussion of which an article on inspection from the assistant-master's point of view would indeed be incomplete. The Ximacrian position of head, assistant, and inspector is a new and delicate one. Our friends on the primary wing of the profession now and again receive "that the time has arrived for the establishment of a professional code of honour." It has; but, unluckily, codes of honour come not by resolution. An Inspector who does his duty in pointing out defects will need all his tact if he is not to appear as a maker of mischief between the headmaster and his colleagues. If the defects are serious enough to require mention in the report, he will probably be well advised to let that mention suffice. In other cases a safe rule would be to make no comment to the headmaster of which the assistant-master affected had not been informed. It should be no part of an official Inspector's duty to give testimonials or to recommend candidates for actual or prospective vacancies. Probably most of the inspecting bodies have a rule forbidding this practice: if so, it is occasionally broken. Some day good assistant-masters will be as rare as good football-players,—at present everybody knows they are as plentiful as rabbits—and when that time comes, Inspectors who break this rule will carry their lives in their hands, as we are credibly informed the *entrepreneur* of a League team does now.

One of the most experienced of H.M. Inspectors has told us that "free conference between the inspectors and teachers . . . . is the best form of inspection." The remark has an important bearing upon the Report. Many hints, and even corrections, which would appear formidable in a written document assume their proper proportions when given conversationally. If the Inspector lays his conclusions before the staff, jointly and severally, in this way he will help them more than many blue-books can. But there are two other parties to the case—the governors of the school and the local public. By the former a detailed and necessarily somewhat technical statement is required. The latter want a *résumé* couched in untechnical language and without details, or they will not see the wood for the trees. The practice of the Board of Education, therefore, in making only one report and insisting on the publication of all or nothing seems to the present writer a mistaken one. Moreover, in whatever form the report be cast, the assistant-masters should be made acquainted with its contents. At many schools it is the custom to read it at a masters' meeting; but in some, the headmaster withholds it on the ground that it is a confidential document.

In spite of occasional hesitations and a doubter here and there, the thought of inspection is not unwelcome to assistant-masters. In Homer's battles the heroes reap the glory, and of the common soldiers we catch only glimpses. So for too long has it fared with us. For the most part we lead obscure lives in none too well-lighted class-rooms, gaining a fleeting recognition upon Founder's day, and thereafter retiring for another year into seclusion. It is time the doors of the house stood open—time that we were acknowledged by authority as something more than the servants of a servant. The doors are open, and the acknowledgment is gained, when we come face to face with the Inspector.

The Church of St. Mary the Virgin, Oxford, in its Relation to some Famous Events of English History. By H. L. Thompson. viii. + 196 pp. (Constable.) 3*s.* 6*d.* net.—The vicar of St. Mary's, Oxford, here publishes seven "sermons" or historical lectures, six of which were delivered in that church before the University or City authorities. Together with the introduction, which supplies some necessary preliminary information, they make a most interesting and valuable little book. The antiquity of the city, the coming of the friars, John Wyclif, the Oxford Martyrs, Amy Robsart, Queen Elizabeth, are but some of the subjects which are vividly brought before us in these discussions. It is a book good to read both for teachers and pupils.

THE TEACHING OF ENGLISH IN SCHOOLS.

By J. H. FOWLER, M.A.
Clifton College.

III.—SUGGESTIONS FOR AN ENGLISH COURSE.

LAST month the chief examinations in the English language and literature provided for secondary schools by external authorities were passed in review. It was, I think, obvious that, whatever the merits or defects of those examinations may be, they do not furnish us with all that we want if English is to be made a real training; nor is it to examining bodies that we must chiefly look to initiate reform. If examining bodies are to help us, I think it will be mainly by raising the standard of the English required in all examinations, and not merely in examinations on one set of subjects. A stringent "marking down" of mis-spelt and ill-expressed answers would undoubtedly have a good effect.

But the first and most essential desideratum is the adoption of a higher English standard by schoolmasters themselves. In a recent issue of the *Circular* of the Assistant-Masters' Association the editor apologises for having stated that "the Senior Physics Master at Bedford Grammar School was vacant." Some apology to the gentleman in question certainly seemed desirable. But the next sentence shows that this was not the apology the editor intended to make. For he proceeds: "It should have been Bradford Grammar School." This specimen of English, which could unfortunately be paralleled from other pages of the same journal, is only too typical of the laxity which many of us allow ourselves in the use of our language. If such is our own standard, can we expect a higher from our pupils? Indolence tempts us all to employ slang, or slovenly constructions, or abbreviations; some of us use these things from an idea that it is easier to get in touch with boys if their own methods of speech are adopted. We shall resist such temptations if we remember that every school lesson, whatever its subject, in which English is the medium of communication between teacher and pupil, ought at the same time to be a lesson in English. In this connection I may quote from an unpublished letter of the late Prof. Withers: "The English composition should only be the formal and deliberate practice, for its own sake, of an art which is being used for other reasons every moment of the week. *The trouble at present is that the English theme is form without matter, and that the rest of the curriculum is apt to be matter without form.*"

But how can the hours definitely assigned to the study of English be best employed? That is the question I propose to answer briefly in the remainder of this paper.

I. ELEMENTARY STAGE (Age, 9-12). In grammar, the parts of speech will be studied and analysis of simple sentences will be taught.

Practice in composition should be of three kinds: (1) *reproduction* of a passage read aloud by the teacher, or of an episode in the history lesson. (2) a simple *description*, *e.g.*, a walk, a game, a building, an easy scientific experiment; (3) the invention of sentences into which a particular word is to be introduced, as a means of enlarging the pupil's vocabulary, and teaching him the correct use of words.

In reading, though the range of books available is more limited than at later stages, there is no reason to be content with anything below the best. There are fairy tales, and ballads, and simplified versions of the old heroic epics, and translations of Plutarch's Lives; there are the novels of Sir Walter Scott; and there are several excellent readers suitable for this and the earlier part of the next stage, such as "The Temple Readers" (Horace Marshall and Son), "In the World of Books" (Edward Arnold). Indeed the difficulty of finding suitable books, well printed and well illustrated, which was a real one twenty years ago, has disappeared, and there is no excuse for using anything that is not good literature.

II. INTERMEDIATE STAGE (Age 12-16).—Exercises in the analysis of compound sentences. Practice in the correction of sentences containing errors of speech. Exercises in the use of words, especially distinguishing words that may wrongly be regarded as mere synonyms.

Composition should include (1) *Reproduction*, as in the earlier stage, but widened to embrace the summarising and re-presentation of any class lesson. The pupil is not asked to supply material, but he is encouraged to arrange his material to some extent for himself, and to choose for himself between the more important and the less important; (2) *Précis-writing*; (3) Original *themes* on some subject suggested by the literature or history read in form, and for which the books read may to some extent supply guidance and, if possible, a model.

For reading we have at this stage the historical plays and comedies of Shakespeare commonly read in schools; such great historical novels as "Westward Ho!" "Esmond," "The Tale of Two Cities," "The Cloister and the Hearth," besides Sir W. Scott; Prescott's "Conquest of Mexico" and "Conquest of Peru"; the narratives of the great explorers; Macaulay's essays and the essays of Addison, Steele, Leigh Hunt, Charles Lamb and De Quincey; Pope's "Iliad," Tennyson's poems, Hales's admirable collection of "Longer English Poems," and Palgrave's "Golden Treasury." If the reading is to be a real pleasure to the pupil, and to encourage a taste for literature, it must not be taken in very small doses. The influence of methods more appropriate to the study of Latin and Greek has probably been unfortunate in this respect, and the influence of annotated editions has tended in the same direction. Above all the influence of examinations has fixed the attention of teachers and pupils upon minute points often to the neglect of larger and more fruitful questions. I cannot, therefore, insist too strongly that, even if the necessities of examination compel

the study of one book in the minuter fashion, there should be other reading undertaken on a different scale and in a different spirit.

Some schoolmasters will perhaps find a serious objection to this counsel in the difficulty of testing whether a book read rapidly has been read with attention and profit. Mr. John Morley once said that he found it a good plan, before reading a book, to make a list of the questions to which he expected the book to give an answer. No boy has the knowledge or experience requisite for making such a list. But if the schoolmaster read the book first and put the questions into the boy's head the reading might be more fruitful than it commonly is. A preliminary talk about a book set for a holiday task might make all the difference to a boy's attitude in reading it, and by consequence all the difference to his intellectual profit. Another mode of testing what has been absorbed from a book read in this manner is to use it as material for essays. If pains are taken to set the themes in advance—and it may be a good plan to announce the subjects for the whole term at the very beginning—a certain amount of guidance in reading will be indirectly supplied in this way.

III. ADVANCED STAGE (Age, 16-19). English composition of a more ambitious nature can now be attempted, but it will be easier to maintain a high standard for essays if we do not set them too frequently. (1) *Reproduction* should still be given occasionally. We may now choose examples from the great statesmen and orators. The reproduction of an argument from a speech of Burke or Pitt is an admirable lesson in reasoning as well as in English composition. (2) *Précis-writing*, care being taken to find an example of some educational value in itself, *e.g.*, the newspaper summary of a blue-book or of a debate in Parliament. (3) *Original* essays should, even at this stage, seldom be upon abstract subjects with very wide limits. Whether the theme is historical, ethical or literary, it will often be a good plan to let it involve a comparison of some kind which the pupil will not find worked out in a book but is obliged to develop for himself.

The literature read at this stage may include the "Canterbury Tales," the "Faery Queen," the great Shakespearean tragedies, Milton, Dryden, Pope, Gray, Wordsworth, Keats, Shelley, Tennyson, Browning; the great English essayists from Bacon downwards; Carlyle's "Heroes" and "Past and Present"; Ruskin's "Seven Lamps," "Crown of Wild Olive," and "Sesame and Lilies." Some of the monographs in the English Men of Letters Series (*e.g.*, Myers's "Wordsworth" and Sir Leslie Stephen's "Johnson") are literature in themselves, and will serve excellently for reading. The study of the history of English literature will naturally have been begun in Stage II. in connection with the reading. It should be conducted chiefly by lectures, not by handbooks, and should be confined to the greatest names. Stopford Brooke's "Primer," and Dowden's "Primer of Shakespeare," may usefully be put into the student's hands in the third stage.

In all these stages reading aloud should be practised. Many difficulties, unnecessarily explained in the ordinary annotated editions, disappear when a passage is read aloud. The study of metre should begin in the second stage, or even in the first. Reading aloud will remove many metrical difficulties. Dr. Mayor's new "Handbook of English Metres" (Cambridge Press) will be found useful by teachers. Occasional practice in English verse is an excellent exercise, and may give, with less expenditure of time, some of the training hitherto given by Latin verse composition.

Such a course as is here sketched out may possibly not bring results that would be easily and accurately estimated by any of our existing examinations. Intelligent and sympathetic inspection, if it can be obtained, would be more likely to gauge the extent of the progress made. But if examinations in prepared books are a necessity, it is still possible, perhaps, to construct papers that will encourage teaching upon the right lines. I will set down, in conclusion, some of the questions I have found it advantageous to bear in mind both in teaching and in examining: "How far has the student a clear picture in his mind of the scenes described, a clear knowledge of the sequence and connection of events, a clear idea of the writer's contribution to thought, of the ways in which his work should widen our sympathies, enlarge our mental horizon? Has he observed how the writer's work is conditioned by the age in which he lived, by the circumstances of his birth and training? Are the characters of the book real to him? In poetry does the rhythm mean anything to him? In prose, the structure and balance of sentences? Does he appreciate the language at all—the reason for the choice of one word and the rejection of another? Has he any conception of the difference between the aims of poetry and prose? Does he understand how far and why the vocabulary of the two should differ?"

I make these suggestions in all diffidence, conscious that they go a very little way, that the best methods in this subject are still to seek, and that no one method is best for all teachers; yet confident that, as an educational instrument, the English language and literature deserve, and will richly repay, greater attention than they have yet received.

The King's English and how to write it. By J. Bygott and A. J. L. Jones. x. + 242 pp. (Jarrold.) 1*s.* 6*d.*—"It is a 20th century book, by 20th century men, for 20th century readers" (*see* the preface). The subjects dealt with include essay writing, *précis* writing, and paraphrasing, and one chapter is headed "Hints as to a Course of Reading." The book is not an elementary one; it is intended to afford a complete preparation for Civil Service examinations, London matriculation, &c. Candidates for such examinations will find in it many valuable helps and suggestions, as, for instance, the outline and model essays, and the solutions of *précis* papers.

THE TEACHING OF HYGIENE IN SCHOOLS.

By J. THORNTON, M.A.(Lond.)
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THE petition to the Board of Education and other central educational authorities which is being promoted by a number of distinguished members of the medical profession, and is, I believe, likely to be signed by a large number of the medical practitioners of the United Kingdom, demands the serious attention of all teachers. It is a petition which virtually asks that instruction in hygiene, or the laws of health, should be made compulsory in all primary schools, and that its study should be encouraged in all secondary schools. Such a demand raises a number of important and interesting questions. In the first place, it is perhaps advisable to get some idea of what is meant by hygiene. It may be regarded as a body of principles or rules designed for the promotion and preservation of health. It will, therefore, in school include a simple treatment of air, food, drink, heating, lighting, exercise, clothing and habits. It thus implies some knowledge of the construction and functions of the body, and some acquaintance with the composition and properties of the atmosphere and of the various kinds of food and drink; in other words some acquaintance with physiology and certain special parts of chemistry and physics. It would be of little use to lay down laws of healthful living without giving some elementary knowledge of the human machine that is to be regulated by these laws. Only by such knowledge can scholars be led to what the petitioners desire—"to appreciate at their true value healthful bodily conditions as regards cleanliness, pure air, food, drink, &c."

The next question that arises is: "What are the claims of this subject to a place in the school curriculum?"—a curriculum that already is believed to be so crowded as to demand all the time given to school life. It can hardly be urged on behalf of hygiene that it is a subject that provides a specially valuable kind of mental training, that it is specially a faculty-developing study like literature or mathematics. If the claims of hygiene to a place in the curriculum are to be admitted, it must be then rather because of its importance as information; its practical utility must be so great that time must be found to teach it. (I do not intend to imply that this two-fold division of the subjects in a school curriculum makes them mutually exclusive, as will shortly be seen.) Now health or physical well-being is so important, not only to the individual but to the nation, that anything which promotes this must receive due attention, particularly if there be hostile forces at work which can be destroyed or checked. The petition calls attention to "the serious physical and moral conditions of degeneracy and disease resulting from the neglect and infraction of the elementary laws of hygiene." This testimony of the highest medical authorities concerning the dire effects of ign and neglect of the laws of health cannot b said by the mere lay reader. But he can see that though the *mens sana* is, without of the highest importance, its value to th vidual and the state is greatly diminished the *corpus sanum* accompanies it. Now hardly be disputed that the tendency of better knowledge would be to diminish thes Of a hundred children taught the most im facts about the structure and working of th and the means of preserving it in vigo health, and a hundred others left without st struction, it can scarcely be doubted that t hundred will enjoy a more robust and lon than the second hundred, and that they more useful members of society.

While urging the great practical uti hygiene I do not wish it to be inferred that no value as mental training. For it will be that the subject as described above is one excites the interest of a large proportion of and interest of such a nature as induces eff stimulates thought on the part of the pupil. parts of the subject, indeed, may really be as an investigation. Pupils themselves ca the normal rate of breathing, the increase rate after a quick walk and after a run. Th be led to discover the chemical changes t undergoes in respiration and the increased of carbon dioxide after exertion; and with guidance they may find out the nature process which leads to alternate expansio contractions of the cavity of the chest.

It may here be well to take note of an ob that is likely to be made by some paren teachers. It may be said that, as hygiene i some knowledge of physiology, it should n a place in the curriculum, as physiology is suitable subject for school study on moral gr In reply, it may be admitted that certain p physiology are not suitable for boys and gi these are just the parts that need not be in such teaching as is required. The r teaching can be given without any refere functions to which it is inadvisable to draw tion, and without, as the petition says, "dev any tendency to dwell upon what is unwhole Moreover, the eager desire of most child know something about their own bodies had be satisfied under the guidance of a skilful t Such a teacher will be able to prevent the of many vulgar and harmful notions and to p a refinement of idea and reverence for th which are quite distinct from that false m so often assumed as a virtue. The natu amount of physiology required for a course struction in the laws of health may be learn a perusal of the syllabus for elementary h issued by the Board of Education, or fro syllabus of practical hygiene for school te prepared by the Sanitary Institute.

Admitting then the desirability and gre portance of some instruction in hygiene, *heitslehre*, as the Germans call it, we ar

lled to ask, "How is it possible to find the or this new subject, seeing that the curri- at present is so full?" If school time is taken up with the subjects included in the ılum, it appears obvious that the time must en from some other subject or the school engthened. Few will be found to advocate rease in the length of school hours, so that ethod of obtaining the required time may be ed. We seem, therefore, to be shut up to essity of finding the time in the other way entioned. This, however, need not always case, paradoxical as the assertion may seem. in the lower classes of both primary and ary schools, very simple ideas of such mat- the composition of the air and the structure ion of the lungs may be obtained during a lesson, provided a reading-book with such is used. In the higher class it will some- e possible to utilise a portion of a chemistry ics lesson to impress on pupils certain phy- al truths and hygienic laws. A lesson on dioxide, for example, may surely serve to the importance of good ventilation; and lanation of the source of mechanical energy am engine may be made the occasion of a rds on the source of the energy of the ody.

apart from this incidental teaching, some ust be found for set lessons on parts of the that cannot thus be taken up. One can drag into other lessons the conditions of digestion, or the structure and action of ı, together with the need of keeping it clean. is objected that the time-table is already so ıt no time can be found for a new subject. s the petitioners say, in effect, that the *must* find a place in the school curriculum. al and national welfare alike demand it; physical and moral results in the individual e community may be mitigated by the train- vocated: its possible usefulness is so great e cannot afford to neglect it any longer. s, it is pointed out that the subject is taught arge number of the schools attended by h-speaking children in our colonies and in ıited States. Anyone acquainted with the books in use in the various kinds of schools erica cannot but be struck with the large r of such books devoted to physiology and e, and to the prominence given in these to the injurious effects of alcohol on the

those convinced of the necessity of this e teaching, this apportioning of a part of hool time to the subject, there comes the ons—How much time per week will be re- ? How are we to find the time? To the uestion I should answer, "one hour a week." han this will not do, for the instruction must de as practical as possible, and this will ne- ıte, in the higher forms, the occasional use of the school laboratories. To the second on no general answer can very well be given, ıools vary so much in type. A little may be taken from the time given to inguistic studies, or from the time given to mathematics, or from the time given to chemical analysis; or it may be from two or three of the subjects already taught. The time thus taken away will not, if what we have said above be sound, be entirely lost to these subjects, for just as some of the other branches of school study may be made to assist the training in hygiene, so may hygiene often be brought in to help and illustrate other parts of the science teaching. In addition, we must not fail to remark that, in assisting a pupil to keep his bodily vigour and energy, we shall make him a more successful student in all branches of study. Nothing is more certain than that sensations of languor, restlessness and weariness in the body tinge the workings of the mind. The appreciation by teachers of the importance of this last remark will be of the utmost service to them in their work.

One question more remains. Are the existing teachers throughout the country qualified to give the kind of education suggested? (It must be remembered that the claim is, that such instruction as we are discussing should be general and begin at a comparatively early period in school life.) As the great bulk of teachers have not had any course of instruction in the subject, one is obliged to admit that there is no such general qualification among them. It is true that students training for elementary teachers are obliged in their course of elementary science to take some biology and domestic science. The knowledge so obtained will be useful as far as it goes, but it is far short of what is required to teach hygiene in the way and to the extent that the petitioners desire. Means must accordingly be taken to provide a better course in hygiene in the Training Colleges as well as to supplement the qualifications of those already teaching in schools. This has been done in other subjects, as, for example, in physical drill. With regard to secondary schools, it is to be feared that there is even less general acquaintance with the subject among the teachers than in the elementary schools. Many of the science teachers, however, will have some acquaintance with physiological facts and rules of sanitation, and their training will soon enable them to add what is necessary to make them competent instructors. The other members of the staff, too, in the higher schools, may be expected to be moved in the direction desired when they realise the force of the plea now being put forward. It is worthy of note that the study of hygiene is one of the noticeable developments in the training of teachers in Germany, possibly as the result of a declaration a few years ago by the Emperor, who said at a conference in Berlin, "I consider it very urgent that the question of hygiene be taken up in the training schools for teachers."

Once convinced of the pressing need of such hygienic training as we have been considering, there is little doubt that the teaching profession will readily respond to the call made upon it by preparing both themselves and their pupils. It can hardly be said now, as was said some years ago, that teachers care little about learning how

they may work with more pleasure to themselves and more profit to their pupils. Honour, patriotism, and self-interest all forbid such indifference.

HISTORY IN PUBLIC EXAMINATIONS.[1]

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II.

In my former article I dealt generally with the function of history in education, and more particularly with the ends which it may be used to serve at each stage of the pupil's career. For purposes of classification this career was divided into four stages, the first extending from the fifth to the ninth year, during which the primary object of the teacher is to excite interest in the minds of the scholars; the second extending from the ninth to the fourteenth year, during which the imparting of "mere information" is the most conspicuous feature; the third extending from the fourteenth to the seventeenth year, during which the quickening of the intelligence and development of the mental powers rank first in importance; the last, beginning with the seventeenth year, in which the student with matured powers sets himself to his life-long task of making himself a master of some branch of learning.

I now turn to discuss in summary fashion the historical curriculum which seems best calculated to effect the purposes thus indicated, and to examine the courses of study laid down by the great public examining bodies with a view to discover how far they accord with the ideal. During the first period the teaching of history is synonymous with the telling of stories, and all the best educationists agree that the most suitable stories to begin with are not historical at all but are frankly imaginative. They are the fairy tales which belong to the folk-lore of the various peoples of the world. Their origin dates back to the infancy of the race, of which the infancy of the individual is in some sort an epitome, and they appeal, as no stories invented by modern art ever do, to the dawning imagination of children. As children hear them they are transported from the town in which they live to the enchanted lands beyond the nameless seas, and they are carried from the commonplace and uneventful days in which their own lot is cast back to that mystic and wonderful age

> Whose margin fades
> For ever and for ever

as they move, that age whose only date is the ever-memorable "Once upon a time." Following the fairy tales come the half-legendary stories of the heroes—Hercules and Perseus, Hector and Achilles, Æneas and Romulus, Alexander and his generals, Arthur and his knights, Charlemagne and his paladins. These lead up to the Biblical narratives of "the great old saints of other days"—narratives inimitable in their directness and simplicity. Finally come the stories from history proper, stories centring round notable men and women and telling of noble and heroic deeds. The child who is brought up on this diet to his fourteenth year will not be unprepared to face the sterner and less fascinating aspects of history which are presented to him in the second stage of his career.

This second stage extends over five years, and it is during this great formative period that the solid foundations of the superstructure of learning must be laid. These foundations should be very broad: anything approaching specialisation should be avoided. It ought to be possible before a boy reaches the age of fourteen to implant indelibly in his mind the outlines of the histories of England (including the Empire), Rome, and Greece. These three are of cardinal importance; for in later life no man can be regarded as an educated man who does not know something of the main sources from which modern civilisation has sprung. To begin with, the stories learned in the preparatory period will be knit together into a continuous whole, much as Creasy's accounts of the "decisive battles" are joined by concise summaries of intervening events. Then the connecting links will be amplified and the outline reduced to order and proportion. The point to be emphasised is that, however meagre the outline may be, the whole of the history should in each case be included. I am strongly of opinion that during this period examinations should be few and far between and I feel great regret that such examinations as those of the College of Preceptors—in which no age limit is imposed—should have induced many headmasters to subject very young children to the examination ordeal. And I feel still greater regret that the pressure brought to bear upon the authorities of Oxford and Cambridge should have led them to introduce "Preliminary" examinations for infantile candidates whom specialisation can only paralyse, and in whom the broad foundations of learning can hardly be laid while every effort of the teacher is directed to the erection of a tottering pinnacle of the specific information demanded by a syllabus.

The third stage, extending from the fourteenth to the seventeenth year, should be one peculiarly rich in mental development, and happy the pupil who falls into the hand of a capable and stimulating teacher during this critical period. At this time, if at any, examinations have their place and their value. For it is now, when the wide outlines have been grasped, that the detailed study of limited specific periods and set books may well begin. Examinations give definiteness to study, make systematic arrangement of work necessary, and in the end enable the student to gain a true estimate of his powers by telling him how he stands in relation to his fellows. The history to which prime attention should be directed during this period is that which

[1] *The first article appeared in* The School World, January, 1904.

th the great epochs in the progress of the ose epochs which show most clearly the nts of ideas. Among these fruitful subjects mentioned as examples, Greece at the time es, the Roman Republic, the growth of the n Church, the rise of Mahomedanism, the s, the Renaissance, and the Reformation, lish and French Revolutions, the develop- German and Italian unity. Whenever original sources, now so easily accessible, e referred to. They should be used, how- supplement and illustrate and not, as in , to supersede the text-book. They pro- nable preliminary exercises in research.

of the great public examinations are l for candidates whose ages fall within this For those near the lower limit there are ord and the Cambridge Junior Local tions and the Second Class College of rs; for those near the higher limit there Oxford and the Cambridge Senior Locals, t Class College of Preceptors, the London ation, and the examination for the Junior te of the Joint Board.

fourth or specialist stage the pupil has lmost beyond the bounds of the school If he is concerned with examinations, it is the examinations for entrance Scholar- the Colleges of Oxford and Cambridge h he prepares; but worthy to rank with the examination for the Higher Certificate int Board.

history syllabuses of the various public tions for the current year may now be id examined.

I.—Oxford Local Examinations.

liminary. (Candidates admitted to 16, but honours those under 14.)
ines of English history, 1066-1399; or, (*b*) Outlines history, 1603-1715.
ior. (Candidates of any age admitted, honours those under 16.)
k history from 510-404, with the Ionic revolt and wars as a special period; or,
nes of English history, 1603-1715, with special period, or,
nes of English history, 1066-1399, with special period, ; or,
nes of general European history, 987-1215.
ior. (Candidates of any age admitted, but honours hose under 19.)
bove for Junior; or (*b*), or (*c*), or (*d*) As above for without special period in any case.

I.—Cambridge Local Examinations.

liminary. (Candidates admitted to 16, but honours those under 14.)
of English history, 1327-1603.
ior. (Candidates of any age admitted, honours those under 16.)
ines of History of England, 1327-1603; or,
ines of History of British Empire, 1492-1784; or,
ines of Roman history, B.C. 27- A.D. 117.
ior. (Candidates of any age admitted, but honours those under 19.)
(*a*) History of England, 1509-1603; or,
(*b*) History of British Empire, 1492-1784; or,
(*c*) Roman history, B.C. 27- A.D. 117.

III.—The Oxford and Cambridge Schools Examination Board.

A. *Lower Certificate.* (Age about 16.)
The leading facts, 1272-1509, with special questions, 1327-1399.
B. *Higher Certificate.* (Age about 18.)
(*a*) Greek history to 323 B.C., with special period, 362-23; or,
(*b*) Roman history, 510-133, with special period, 264-202; or,
(*c*) English history, 1272-1509, with special period, 1327-1399.

IV.—London Matriculation.

A. In the compulsory "English" paper some of the questions involve "a knowledge of the most salient facts in English history." These questions usually take the form of an essay, or of explanatory notes on historical allusions in poetical quotations.
B. Among the optional subjects are—
(*a*) Ancient history which includes "the general course of Greek and Roman history, and an outline of the earlier monarchies."
(*b*) Modern history which includes "the general course of English history from 1485 to the death of Queen Victoria, with some reference to the contemporary history of Europe and colonial developments."

V.—College of Preceptors.

A. *Third Class.* (Prizes limited to candidates under 14.)
(*a*) English history, 1066-1485; or,
(*b*) English history, 1485-1688; or,
(*c*) English history, 1688-1815.
B. *Second Class.* (Prizes limited to candidates under 16.)
(*a*) English history, 1066-1485; or,
(*b*) English history, 1485-1688; or,
(*c*) English history, 1688-1830.
C. *First Class.* (Prizes limited to candidates under 18.)
(*a*) English history, 1066-1399; or,
(*b*) English history, 1603-1715.

A comparison of these syllabuses suggests the following reflections:—

Most of the examining bodies set somewhat short special periods for detailed study, rather than long periods to be studied in general outline. This obviously simplifies the work of examining, but it seems to lead to premature narrowing of the field of study. The London University has set a good example in its matriculation, "Modern History" (1485-1901), and if it had an alternative, "Mediæval History" (B.C. 55— A.D. 1485), it might be regarded as the ideal syllabus, so far as English history is concerned.

History other than English is unduly neglected. This is particularly the case with general European history, the history of the British Empire, and the history of the United States. It seems specially desirable that the study of these should be encouraged, and the recent publication of excellent text-books on all three subjects removes that objection to their inclusion in an examination syllabus which up to the present has been most difficult to overcome.

The necessary disconnectedness of the work of pupils who are sent in for successive examinations in successive years seems another evil for which some remedy should be sought. A boy may take the eighteenth century in a "preliminary" examination, and find himself hurled back to the Anglo-Saxon period for his "junior," or he may take a small section of Roman history for his "junior" examination, and then find that the corresponding section for his "senior" examination is taken from Greek history. It would appear eminently desirable that sufficient alternatives should always be given to enable a pupil to pursue throughout his course a systematic and unbroken plan of study.

There is evident a general want of relation and connection between the history and the other subjects prescribed in the syllabuses. It is most desirable that between history and geography on one hand, and history and literature on the other, the coördination should be close and intimate.

It cannot be doubted that examinations hold far too large a place in English education, but so long as they maintain that place the great examining boards will continue to exercise a princely power over the curricula of secondary schools. It is therefore of the highest importance that they should frame their syllabuses on the soundest and most enlightened principles.

THE TRAINING OF SECONDARY-SCHOOL TEACHERS AT THE UNIVERSITIES.

The London Day Training College.

THE London Day Training College attached to the University of London is governed by a committee of not less than fifteen and not more than twenty members. This Committee consists of representatives of the Senate of London University, of the Technical Education Board of the London County Council, and of the School Board for London. In addition it includes some members who have an expert knowledge of the requirements of the Day Training College, but are not members of any of these bodies. The site of the permanent buildings of the college is on the east side of the south end of Southampton Row, and is separated from Holborn by one block of buildings. In the meantime the lectures are (by the grace of the Council) given at the College of Preceptors in Bloomsbury Square, while the tutorial work is carried on in a suite of rooms at No. 9, Southampton Street, W.C.

The permanent staff consists at present of the Principal, John Adams, M.A., B.Sc.(Glasg.), who is also Professor of Education in the University of London; Mr. David R. Harris, M.A. (Cantab.), Mr. Charles D. Chambers, M.A.(Oxon.), *Miss* M. Punnett, B.A.(Lond.), Miss A. B. *Bramwell, B.Sc.(Lond.),* Miss Clotilde von Wyss. Arrangements are made by which specialists w give short courses on the teaching of their subject

The course is open to graduates of both sex (in the case of women, those who have fulfilled the conditions of graduation, except that of se are naturally treated as graduates), and covers academic year of three terms. The course may begun at the end of September, in which case t students are presented for the Teacher's Diplom of the London University on the first Monday the following July; or it may be begun in Januar so as to lead up to the Diploma examination o the second Tuesday of the following Decembe All the students of the Training College becom registered internal students of the University, an the Diploma examination is now open to all suc registered students as are graduates of London, *of any other recognised University*. Graduates of oth Universities are required to pay a fee of £2 befo they can be registered as students of the Universi of London. The fee for the Diploma examinati is £5, and the fee for the year's course of traini is £20. The total fee for a London graduate thus £25, for the graduate of another Univers £27. In respect of the £20 tuition-fee, the Colle prospectus bears the following statement: "A f free places may be granted to candidates who ordinarily resident within the Administrat County of London, and whose circumstances c for this concession. Each such case will decided on its merits." Students are expected devote their whole time to the work of the Coll during the year of training. Special arrangeme may be made whereby students who are receivi their practical instruction outside the College, b in accordance with a scheme approved by t College authorities, may be admitted to the lectu at half the ordinary fee. Applications for a mission, and for free places, should be addressed the Secretary of the Technical Education Boa 116, St. Martin's Lane, London, W.C.

At present the time-table is so arranged that t practical work is taken in the mornings, and t lecture work in the afternoons. Up till now schools that have afforded practice for the stude from this College have been: Aske's Sch Hatcham (girls); Central Foundation Sch Spital Square; King Alfred School; Skinn Company's School; University College Scho North London Collegiate School. As t Technical Education Board is in touch with large number of the best schools in London, t College is not likely to lack good schools f practice even if the number of students should greatly increased. Each student spends two f mornings (in some cases, but rarely, three) p week in the school to which he (she) is attache By arrangement with the school authorities certain subject in a given class is entrusted to student for a term, and under the joint directio the Master (Mistress) of Method and the teacher the class, the student carries on the work for th term. The progress of the class is regularly note and at the end of the term the pupils are formall examined. In this way not only is the student

progress recorded, but the pupil's interests are safeguarded. Every facility is given to a student to develop his (her) skill in any subject in which he (she) is specially strong, but no student is allowed to *confine* him (her) self to a special subject. Good all round practice is insisted upon. When not engaged in actual teaching, students are allowed to take part, as far as possible, in the general work of the school. They observe skilful teachers at work, and they themselves take a share in the smaller duties of school management, in connection with the coming and going of the pupils, the supply of books, the supervision of corridors and playground. So far as is possible, students are treated as temporary members of the school staff. In no case are more than three students sent to one school. During each term six or seven schools of special excellence are visited by the students. These visits have always a definite aim, and are carefully connected with the study of methods in the College class-room. Each school is visited for some definite subject—for reading, for geography, for mathematics, for buildings or mechanical contrivance. A certain amount of additional practice is obtained in some of the more advanced of the elementary schools, as it is found that practice in these circumstances is a training in the management of large classes, besides giving a useful insight into a different type of school. Once a week there is a general criticism lesson, at which all the students are present. These lessons are given in schools of different types. On the average, four mornings per week are occupied with the practical work of the course.

Eight hours per week are devoted to lecture work. All the students attend the University lectures on education. These are given throughout all three terms on Tuesdays and Fridays at 4.45, and are attended by the graduate students from Bedford College Training Department, the Maria Grey College, the S. Mary's College, and by the student demonstrators of the Royal College of Science. The other lectures are confined to the following three days of the week:—Mondays from 3.0 till 5.0, Wednesdays from 2.30 till 4.30, and Fridays from 2.0 till 4.0. All the lectures are given at the College of Preceptors, except the University lectures, some of which are given at the University and some at Bedford College. The subjects treated in the lectures are those prescribed for the Diploma examination, but are not limited to those. Considerable attention is paid to voice production, and a course is given in Nature-study and in illustrative blackboard-drawing by Miss von Wyss, who is a specialist in these subjects, and gives up her whole time to them. In addition to the lectures on the science, art, and history of education, and on the more practical arts of ordinary school management, the course provides for lectures on the methodology of all the subjects found in the curriculum of a good secondary school. Each member of the staff takes up his (her) own special subject. In addition, there are the short special courses referred to above. For example, Mr. T. P. Nunn, M.A., takes up the methods of teaching physical science, and has at his disposal for this purpose the model laboratories fitted up at Shoreditch Technical Institute.

No college classes are held on Saturday for either theory or practice, and at least one morning is left free every week. Of the afternoons, one is entirely free, and on another there is only the University lecture. The time thus left free is expected to be devoted to private reading to some extent at least, and the students are provided with a minimum list of books that must be read by all. To this end there is a working library for the students at Southampton Street.

THE GEOGRAPHICAL ASSOCIATION.

TOWARDS the end of 1892, in consequence of considerable correspondence with the Royal Geographical Society and many teachers of geography, Mr. Dickinson, of Rugby School, issued a circular inviting certain public schoolmasters to join him in forming a private association for the purpose of subdividing the work of making lantern slides for the teaching of geography in order to prevent the great waste of time necessitated by isolated efforts. Copies of this circular were sent to the Royal Geographical Society and to the Royal Colonial Institute. The result was that a second circular was sent out convening a meeting, which was held at Christ Church, Oxford, on May 20th, 1893. This circular was signed by Mr. D. W. Freshfield, representing the R.G.S., the Rev. Dr. Field, then H.M. of King's School, Canterbury, Mr. H. J. Mackinder, Oxford, Mr. B. B. Dickinson, Rugby, and the Rev. C. E. B. Hewitt, of Marlborough College. At this meeting it was unanimously agreed "That an association for the promotion of geographical teaching should be instituted." A report of the proceedings was printed and sent out, together with an invitation to schools and teachers to join the newly-formed association, and resulted in some thirty-five individuals and six schools joining it. The Association accordingly became a public and not a private society, designed to help those engaged in teaching in preparatory and secondary schools, and in higher educational institutions. The main aim of the Association at first was to provide good lantern slides, and this was successfully carried through by the energy of Mr. Dickinson, at first alone, and then in association with Mr. Andrews. This department of the Association grew so rapidly that it was found necessary to form a private company unconnected with the Association to carry out the work, and the Diagram Company was the result. Messrs. Andrews and Dickinson have devised many methods of making lantern-slides which have enabled an entirely new and beautiful set of map slides to be placed on the market.

In its efforts to produce better outline maps and atlases the Association has also been successful.

"The Autograph Series" of hand maps, begun by Messrs. Dickinson and Darbishire, is now much extended and issued by Messrs. Darbishire and Stanford, Ltd., of Oxford, and the "Diagram Series," designed by Messrs. Dickinson and Andrews, of Clapham, is likewise well known. Members of the Association receive substantial discounts when buying these slides and maps.

The Association has issued no atlases of its own, but on two occasions the Committee appointed some of its members to confer with publishers and advise regarding the qualities that are of vital importance in an atlas designed for teaching

Mr. B. B. DICKINSON, M.A., Rugby School.
Founder of the Geographical Association.

purposes. The cheap atlases edited by Mr. Arnold-Forster and by Mr. G. Philip, jun., were the result.

Nor were books neglected. The Committee were early impressed by the difficulty many teachers experience in selecting books, even for their own reading, and accordingly they resolved that a bibliographical guide should be drawn up for teachers of geography. Dr. Mill, then librarian of the Royal Geographical Society, was obviously the member of the Committee to undertake the preparation of this work. It was issued with the title "Hints to Teachers and Students on the Choice of Geographical Books for Reference and Reading," and was published by Messrs. Longmans in 1897.

A serious hindrance to better methods of teaching geography was felt to be the current examination syllabuses and papers. Accordingly, memorials were sent to various examining Boards asking for improved questions in, and a fuller recognition of, geography; and these memorials have *not* been without good results. More than one *attempt was made to prepare* an ideal syllabus; but after much correspondence and discussion was found that the requirements of schools wer so varied that no one syllabus could be satisfactor At a later date, however, several members of th Geographical Association were invited to serve o the Special Committee of the Royal Geographica Society, which has recently issued suggestions fo the drawing up of syllabuses.

At its annual meetings the Association ha combined addresses by distinguished authorities or geography and education, such as Mr. Freshfield (the President), Mr. Bryce, Sir John Cockburn Mr. Mackinder, Dr. Mill, the late Mr. Rooper and others, with exhibitions of maps, lantern slides, and lectures on methods, such as Mr Dickinson's on geography as a school subject, and Mr. Andrews' on the use of map and view slides.

In 1900 the Association was thrown open t all teachers of geography, the number of member then being little over a hundred. Since then th membership has grown very rapidly, and now numbers almost 400.

For some years the American *Journal of Schoo Geography* was supplied to members at a reduce price, but it was felt that the Association shoul have a journal of its own. Accordingly, in 190 the *Geographical Teacher* was begun as a termina periodical dealing with geography applied t education. Three numbers have been published annually since that date and supplied free t members.

Last year the Committee of the Association memorialised the Board of Agriculture in favour of the sale of ordnance maps at reduced prices for teaching purposes, and were met with a generous response which permits all schools to obtain a supply of ordnance maps at very cheap rates. Special cheap editions not merely of the one-inch map but also of the six-inch, and of the four and ten miles to the inch maps can now be ordered. Last year the Association resolved to co-operate with the Technical Education Board in organising a conference on the teaching of geography which was held in January, and in connection therewith a large collection of maps of all kinds, atlases, books, pictures, and apparatus was brought together and exhibited. These exhibits have been shown at three centres in London, and are to be exhibited at many of the large towns throughout the country. (At present at Manchester.)

To sum up: the work of the Association has led to great improvements in lantern slide maps, in outline maps, in school atlases, in cheapening ordnance maps, in modifying examination programmes, in the preparation of a bibliography and through the *Geographical Teacher* in bringing to the notice of its members many valuable contributions to the discussion of the problems of geographical education. It has helped to bring together scattered teachers who are trying experiments and to encourage those who are striving in out-of-the-way places to make the teaching of geography of greater educational value. The Association now contemplates the formation of

local branches, both at home and in the colonies, and the Committee will specially welcome the co-operation of readers of THE SCHOOL WORLD.

It gives us much pleasure to print a portrait of Mr. B. B. Dickinson, of Rugby, the founder of the Association, who has done much to make it a successful organisation.

The Honorary Secretary of the Association is Dr. A. J. Herbertson, of the Oxford School of Geography, and it is to his energy and enthusiasm that a large part of the success of the Association—especially in recent years—is due.

There is no entrance fee. The Annual Subscription is 5s., and may be compounded for a single payment of £3 10s. New members should send their names, addresses, schools, positions in school, and the amount of their subscription, to Mr. J. S. Masterman, St. Margaret's, Dorking.

SELECT LISTS OF BOOKS FOR THE SCHOOL LIBRARY.[1]

CLASSICS.

By S. E. WINBOLT, M.A.
Christ's Hospital.

In response to a request to supply a list of twenty books on classical subjects which might find a place in school or house library, I have noted the following. Obviously it would be possible to furnish two or three alternative lists which would be as good; but I should be very well pleased if any Carnegie would present the books here mentioned to my own house library. My object is to get *stimulating* books in the different departments of social life, history, literature, and art; and I allot ten to juniors, up to and including a fourth form, and the rest to seniors, comprising fifth and sixth forms.

A.—JUNIORS.

"Kingsley's Heroes." (There are numerous cheap editions.)
"Story of the Iliad." } Prof. Church. (Seeley.)
"Story of the Odyssey." } 6d. each.
"Becker's Charicles." } Edited by Metcalf. (Long-
"Becker's Gallus." } mans.) 3s. 6d. each.
"Greek History for Young Readers." Alice Zimmern. (Longmans.) 4s. 6d.
"Merrivale's School History of Rome." Abridged by C. Puller. (Longmans.) 3s. 6d.
"Caesar's Conquest of Gaul." T. Rice Holmes. (Macmillan.) 21s. net.
"Plutarch's Lives" in English.
"Illustrations of School Classics." G. F. Hill. (Macmillan.) 10s. 6d.

B.—SENIORS.

"Companion to School Classics." Dr. Gow. (Macmillan.) 6s.
"Student's Companion to Latin Authors." Middleton and Mills. (Macmillan.) 6s.
"Handbook of Greek Sculpture." E. A. Gardner. (Macmillan.) 10s.
"Pompeii: Its Life and Art." A. Mau. Translated by F. W. Kelsey. (Macmillan.) 10s. 6d.
"Latin Poetry." Prof. R. Y. Tyrrell. (Macmillan.) 7s. net.
"Growth and Influence of Classical Greek Poetry." Sir R. Jebb. (Macmillan.) 7s.
"Hellenica." Edited by Evelyn Abbott. (Rivingtons.) 16s.
"The City State of the Greeks and Romans." Warde Fowler. (Macmillan.) 5s.
"Lectures on Classical Subjects." Prof. W. R. Hardie. (Macmillan.) 7s. net.

There can be little doubt that any boy who, in addition to his form work, had thoroughly digested the books in this list would make pretty sure of a classical scholarship; and I venture to think that with a little judicious guidance he would find them thoroughly interesting reading.

[1] These lists were commenced in THE SCHOOL WORLD of last month, when history, English literature, and geography were the subjects.

THE EVOLUTION OF THE MODERN STATE.[1]

IT was the custom of the late Prof. Sidgwick to give courses of lectures on the various branches of moral science to his pupils in the University of Cambridge, gradually elaborating them from year to year and adapting them to the needs of learners till they were ripe for publication. Such was the genesis of the "Principles of Political Economy" and the "Elements of Politics," which were published in his lifetime. But he was cut off somewhat early before he had finished the work which he had set himself, and his course on political science remained uncompleted. His widow has here in a most able way given to the world the unfinished work. It is a tradition at Cambridge that Prof. Sidgwick was collaborating with Sir John Seeley to bring out a complete course of political science, based on the principle which they had in common, that politics could be treated in a similar way to such sciences as astronomy and biology, that it should be based on an inductive study of past and present constitutions, and that a science thus formed would be of practical service to all interested in the art of government. But Prof. Seeley was also prevented by death from completing his researches and presentation of the subject, and loving friends have been able to offer only the fragments of his work. Thus it is with mingled feelings that we receive this book. We regret the unfulfilment, but we are grateful to those who have given us what was possible.

The fragment, however, is, as all who knew Prof. Sidgwick would anticipate, a welcome gift to the world. After an introductory survey of the subject, the earliest known institutions of Greece,

[1] "The Development of European Polity." By H. Sidgwick. xxvi. +454 pp. (Macmillan.) 10s. net.

Rome and Germany are described and compared. In the third lecture, "guesses" are made at what most probably preceded the "primitive polity," and the patriarchal theory is examined, criticisms being given on the theories of Maine and M'Lennan. Here Prof. Sidgwick leaves us rather in an attitude of cautious doubt than of ultimate certainty. We should specially have wished for his solution of the origin of the Roman *patria potestas*. In lectures iv.-xi. the story is followed of the development of polity in the Greek states and in Rome; the ideal states of Aristotle and Plato are described, while the twelfth lecture discusses the relation of law to government in "classical" times.

Three lectures introduce the country-states of Europe, the phenomena of feudalism and the mediæval theocracy. It is in this part of the subject that we feel inclined to differ from some of Prof. Sidgwick's presentations. He regards the feudal baronage as an oligarchy resisting the tendency to monarchy. We should prefer to regard the disruptive forces of feudalism as struggles for local government, tending quite as much for monarchy (*i.e.*, petty monarchies) as the more centralised efforts of the kings who represented better what there was at that time of national feeling. Indeed, in various parts of the book we find the author taking this view himself. In his definition of theocracy, we think Prof. Sidgwick is too narrow. He requires much more assimilation to the pattern of the Austinian State (temporal power, connection with a territory, &c.) than a church often possesses before he will give the name of theocracy to a society which governs its members, and is based on an at least alleged divine origin. He seems to contrast a theocracy with monarchy, oligarchy, or democracy. Surely such an institution as the Christian Church, which from the beginning *governed* its members, may be regarded as a state having one or other of these forms. Surely also the earliest Roman and the earliest Greek states were theocracies while citizenship was closely connected with religious observances.

Lectures xvi.-xxi. are devoted to mediæval city life and their share in representative institutions, and then we are conducted through a consideration of absolute monarchy, and of the theories of Hobbes, Locke, Montesquieu, and Rousseau, to modern forms of government. The development of the modern English constitution is traced, because it has been the pattern for nineteenth-century continental constitutions, and the importance of 1660 and 1832 is emphasised as against 1688. The book ends with a too brief lecture on modern federation. Space forbids us to enter into discussion on some points of special interest. But we commend the book most heartily to our readers. It assumes, of course, a knowledge of European history, but to those equipped with this preliminary it will prove a source of much interest and profit. Prof. Sidgwick was one of those who of late years have accustomed us to a fresh and lively treatment of what used to be regarded as dry bones. By casting off all regard for traditional views, they have introduced human-ness into co stitutional history, and, to choose one exampl we have here a treatment of the Twel Tables which makes that bit of archaism a livi story.

ELECTRICITY AND MATTER.[1]

A FEW years ago all known facts concernin the phenomena of conduction of electricit through gases could readily be concentrate into a single chapter of a text-book on Genera Physics. The volume written by Prof. Thomso is a proof of the remarkable advance which ha been made in recent years in our knowledge of thi special branch; in fact, most of the experiment work described has been carried out during th last ten years. The reader will find a full descrip tion of the work done by the leading pioneers i electrical science, and will yet be impressed by th brilliant work done by Prof. Thomson himself i the Cavendish Laboratory. Although, in certa parts of the text, the mathematical treatment is an advanced order, yet the non-mathematic reader will obtain a clear notion of the chief resu obtained.

The earlier chapters describe observations whi prove that gases in a normal state possess condu tivity which is not due to dust or moisture or the removal of a charge by the molecules of t gas. Also, a much higher conductivity is observ in gases from flames and hot metals, or when ne to an electrical discharge; and the same proper is imparted by exposing the gas to (1) Röntge or Cathode rays; (2) rays from uranium, radiu &c; and (3) ultra-violet light. Moreover, sin the conductivity is destroyed by passing the g through a strong electrostatic field of force, it evident that the conducting gas must conta *charged* particles; and there must be equal *positi* and *negative* charges, since the gas itself is n charged. These charged particles are called *io* and it is subsequently proved that these ions not the same as those met with in the electrol of solutions: it is also proved that the *charge* car by the ions is the same in air, oxygen, hydro or carbon-dioxide, and that the charge is equal that carried by the hydrogen atom in the electr lysis of solutions.

Perhaps the most attractive portion of the su ject is that in which the ratio (e/m) of the charge the mass of an ion, and the absolute values of and of m, are determined. The method of dete mining the ratio e/m depends upon the deflecti which a charged ion, moving with great velocit experiences when passing through a magnetic a an electrostatic field of known intensities: rapidly moving ions are obtained by the use *cathode* rays generated in a highly exhausted tub

[1] "Conduction of Electricity through Gases." By J. J. Thom 554 pp. (Cambridge: University Press.) 16s.
"Electricity and Magnetism." By R. T. Glazebrook. 429 pp. (Cam bridge: University Press.) 7s. 6d.

ean value of the ratio is found to be
^{6}, and the value is quite independent of
used. The value of the ratio for the
n atom in the electrolysis of water is 10^4.
:e the charge on a gaseous ion is equal to
rge on the hydrogen atom in electrolysis,
s of the hydrogen atom must be 770 times
he ion in cathode rays. Experiment also
hat the velocity of an ion in cathode rays
to $2{\cdot}8 \times 10^9$ cms. per second, or approxi-
ne-tenth that of light.
few observations of *positively* charged
ions seem to have been made. By using
ated cathode, pencils of light penetrating
ds through the holes have been observed.
ount of deviation of these rays due to a
: field proves that the value of the ratio
the same magnitude as in ordinary elec-
but this may be due to each ion being
ith an atom of the gas or of the cathode

the brilliant experiments described, per-
most attractive is the determination, by
endent method, of the absolute values of
described in chap. VI.; but limitations of
l not allow a description of the method to

The author here gives the term *corpuscle*, in preference to the term *electron*, to the
y charged gaseous ion, and suggests a
electricity closely resembling the primi-
ie Fluid Theory." According to this
a transference of electricity may be due
ement of corpuscles from a place where
gain of *positive* electrification to a place
ere is a gain of *negative* electrification, and
y-charged body is one which has been
of some corpuscles."
observation of a rapid discharge of negative
s from incandescent metals and carbon
that streams of corpuscles may proceed
sun's photosphere, which contains much
:arbon. These corpuscles, if moving with
city, will impart conductivity to the upper
the earth's atmosphere and give rise to
ious effects of the Aurora. The discharge
ged body when held near to a flame is
e electric field of the body attracting the
posite sign which are present in the gases
y the high temperature of the flame.
r XII., on "Becquerel Rays," gives a
account of the known facts concerning
tions from uranium, thorium, radium, &c.
l observed, in 1896, that if some uranium
d was placed on a photographic plate
by opaque paper and then exposed to
plate was affected as though exposed to
rays. This was not due to the phosphor-
aused by exposure to light, for the same
s obtained even when the compound was
lised from solution in the dark. It was
rved that the radiation makes any gas
which it passes a conductor. Rutherford
at the uranium radiation consists of a
of two types: one (α) being absorbed by
limetres of air and causing much ionisa-
tion, the other (β) having much penetrating power and consists of negatively-charged particles moving with high velocity. Crookes proved that the β radiation proceeds from an unknown impurity, which may be separated from the compound by a chemical method, but then rapidly loses its radiating power, while the purified uranium slowly regains its normal power.

Rutherford observed much uncertainty in the radiation from thorium oxide, owing to the presence of a radio-active *emanation*, which can be heated to red-heat without losing its radio-activity. If the oxide is heated above red-heat the "emanating power" is considerably reduced, but the power is recovered if the oxide is dissolved and re-precipitated; it was subsequently proved that the emanating power is due to an active constituent (termed Thorium X or Th. X) which may be removed by a chemical method, but the oxide slowly recovers both its radio-activity and its emanating power.

The story of the search made by Mme. Curie for substances more radio-active than uranium compounds, resulting in the discovery of radium, has been so often described that it is scarcely necessary to enlarge upon this remarkable piece of research.

It is sufficient to state that radium, which has an atomic weight of 225 approximately, closely resembles barium in its chemical reactions, but is separated by the lower solubility of the chloride in water. The radiation from radium is so intense that, if enclosed in a lead tube 0·5 cm. thick, it will discharge an electroscope more readily than unprotected uranium. The radiation is a mixture of three types: (i.) α *rays*, which are readily absorbed, slightly deflected by a magnetic field, and carry a *positive* charge; (ii.) β *rays*, which are more penetrating, are easily deflected in the opposite direction to α rays, and carry a *negative* charge; and (iii.) γ *rays*, which are far more penetrating and are not deflected. Radium gives out an emanation which is far more persistent than that of thorium.

A separate chapter is devoted to the numerous observations on "Cathode Rays," obtained in a highly exhausted tube. Goldstein, with many other German physicists, maintained that these consisted of waves in the ether. On the other hand, Crookes was convinced, by experimental results, that the rays consisted of electrified particles shot out with great velocity from the cathode and at right angles to the surface. It was generally held by English physicists that the phenomena were due to charged atoms flying with ordinary molecular speed, but with a long free path; but Crookes went further than this and suggested, by one of those flashes of intuition which seldom come even to the discoverer, that he had obtained matter in "a fourth state." After many years it has been clearly proved that cathode rays consist of "corpuscles" (or "electrons") moving with a velocity approximating to that of light.

Further chapters, dealing with the spark discharge, the electric arc, and Röntgen rays, are full of interesting information. The volume is un-

doubtedly a noble addition to our scientific literature.

Dr. Glazebrook's text-book of Magnetism and Electricity is based upon a first-year course of lectures to students. Interspersed through the text, numerous experiments are described in sufficient detail to enable students to use the volume as a laboratory guide. Although a considerable portion of the text has been in print for a long time, additions have been made, where necessary, to bring the subject-matter well up to date; thus two short chapters on "electric waves" and "transference of electricity through gases" have been added at the end of the volume. It is unfortunate that diamagnetism, and the accurate determination of magnetic dip, are so briefly described. The volume is prepared in a most attractive style, and can be strongly recommended as a sound elementary text-book.

EDUCATION IN LONDON.[1]

So far as the administration of its educational affairs is concerned, London's position is to-day unique. While throughout England the county councils and the county borough councils have taken, or are now actively taking, steps to appoint local education authorities charged with the duty of administering education as a whole, no such body can come into existence in London until May 1st, 1904. Until then London's education must continue to be regarded as consisting of unrelated parts. The School Board remains responsible for most of the elementary education, the London Technical Board for the parts of education which can be made to fall within the four corners of the Technical Instruction Acts, the Senate of the University of London for higher education, and a bewildering variety of governing bodies for secondary schools of all grades. But when the Act of last year comes into force in May, the London County Council will be presented with the problem of dealing with the whole of London's education, and, though the task offers a grand opportunity for the unification of educational effort in London, it is as difficult and complicated as can well be imagined.

In his little book, Mr. Sidney Webb passes in review the difficulties likely to be met with, and offers a number of valuable suggestions to show how the best use may be made of the possibilities created by the Act of 1903. Mr. Webb is to be congratulated upon the attitude he has adopted. The Act of last year is now law, and it is the business of all whose duty it will be to administer the provisions of the Act loyally to endeavour to extract from them the maximum benefit for the education of the children and youths of London. Many members of the coming education committees and many future school managers may consider th Act iniquitous in some respects, but, so long the law remains as it is, their duty is clear. P vate opinions must be made subservient to th honest administration of the directions of the A which calls these local administrators into being.

The problem with which the London Count Council is shortly to be confronted is, too, giganti in its proportions. A few facts are enough t demonstrate this. Let us give a few cited by Mr Webb. The elementary schools of London ar attended by 800,000 children, and half a million o these belong to Board Schools. There are, as result of the work of the London School Board—

"five hundred new public buildings, occupying 600 acres valuable land, existing now in every one of London's fifty-eig electoral divisions, four to the square mile of the whole London's surface, erected at a cost of fourteen millio sterling."

"At least a quarter of the present public elementary scho buildings of London are old and insanitary, and will have to b rebuilt, if not by foundation managers out of private subscri tions, then as 'provided schools' at the public expense."

"The difference in real educational quality between the be and worst London Board School is pretty considerable, and may be doubted whether anybody but the School Board's ow inspectors know how unsatisfactory the worst schools are, o what proportion the bad ones bear to the whole. Still greate divergencies exist among the 500 voluntary schools, which educate two-sevenths of the children."

"London must somehow get established, primarily for its ow supply, additional training college accommodation equal to a annual output of 500 teachers, chiefly women."

"The London County Council's 'scholarship' scheme ha now necessarily to be revised, to bring it into accord with th changes lately made in the school-leaving age and the pupil teacher system."

"These two schemes of evening instruction (*i.e.*, those of th School Board and the Technical Education Board) have no to be co-ordinated, differentiated, and developed. . . . I ought not to be too much to ask that every boy or girl wh leaves school at fourteen or fifteen should, up to twenty-one, b at any rate enrolled at some evening-class institution. . . Yet there are in London over 600,000 young people betwee fourteen and twenty-one, and not a third of these are at presen members of any sort of institution, recreational or educa tional."

It is unnecessary to multiply examples of th questions to be settled: these taken from th domains of primary and secondary education alon will, without referring to university and techno logical instruction, show how much there is to b done. But the most impressive aspect of th administration of London's education, on whic Mr. Webb lays due emphasis, is that education i in the future to be regarded as an organic whol one and indivisible, and that the first work of th new authority must be to co-ordinate and correlat the existing institutions, and, after an adequat educational survey, to remedy deficiencies and fi up undesirable gaps.

Mr. Webb's book deserves to be studied by a interested in what is at present London's mo pressing problem.

[1] "London Education." By Sidney Webb. ix. + 219 pp (Longmans.) 2s. 6d. net.

LABORATORY AND LECTURE NOTES.

Compiled by H. E. HADLEY, B.Sc.(Lond.), A.R.C.S.
Headmaster of the Kidderminster School of Science.

[TEACHERS of practical science are always glad to have their attention directed to ingenious or instructive experiments for the laboratory or lecture-room. It is proposed occasionally to bring together short descriptions of such experiments and methods, compiled from various sources, or contributed by our readers. References to any publications in which new or little-known devices of this character are described, or better, copies or abstracts of the descriptions, will be welcomed from science-masters and mistresses, and acknowledgment will of course be made if the notes are published. It is scarcely necessary to add that original contributions will be much appreciated. The accompanying series indicates the kind of note required.—EDITORS, SCHOOL WORLD.]

Cleaning Glassware. Glass vessels are best cleaned by rubbing with a brush and caustic potash solution; after thorough rinsing with distilled water, the vessel may be allowed to drain and dry spontaneously. The surface is left in better condition if dried by a current of cold, dry air; *warm* air usually leaves a stain on the surface. If the surface cannot be reached by a brush, small lead shot may be introduced and shaken up with the caustic. After rinsing with water, wash with nitric acid to remove any traces of lead, and finally rinse with distilled water. (Miller's "Laboratory Physics;" Ginn & Co.)

Cleaning Optical Surfaces for Silvering. Remove any grease by using alcohol or chromic acid, then firmly rub the surface with a swab of cotton attached to a glass or wood rod and soaked in strong nitric acid. Rinse with water, and wash thoroughly with a strong solution of caustic potash, rubbing with a cotton swab as before. If the water wets the whole surface uniformly, the cleaning has been sufficient; if it does not wet uniformly, the process must be repeated. Run a solution of stannous chloride over the surface which is to be silvered, wash well with tap-water and finally with distilled water.

The Silvering of Glass. Make up the two following solutions: (i.) Dissolve 5 gms. of silver nitrate in about 250 c.c. of distilled water and add ammonium hydrate until the precipitate formed is *nearly* dissolved. Shake the solution for a minute and see if the precipitate disappears; if too much ammonia has been added, more silver nitrate must be dissolved and added until a permanent precipitate is obtained. Filter the solution and make up to 500 c.c. (ii.) Dissolve 1 gm. of silver nitrate in a small quantity of distilled water, and add about 500 c.c. of boiling distilled water. Add 0·8 gm. of Rochelle salt, and continue the boiling for about half an hour, or until the precipitate becomes grey. Filter while hot and make up to 500 c.c. These solutions must be kept *in the dark* in glass-stoppered bottles.

For silvering, the surface may rest face up on the bottom of a dish, or may be supported face downwards. Measure with water the quantity of solution which will be required to cover the surface with about 2 cms. depth of solution. Mix together equal volumes of the solutions and quickly pour into the silvering-dish. A uniform temperature of about 20°C. is essential. The dish should be occasionally rocked, and the process is complete in about an hour. Remove the mirror, rinse in water, carefully remove any sediment with a tuft of cotton wool, rub off the silver from any parts where it is not required, and *allow the deposit to dry*. The surface may be polished with a soft chamois leather and rouge, and may be protected by applying a coating of clear lacquer.

The waste solution should be poured into a bottle, and common salt added; most of the silver can be recovered from the precipitated chloride. Any deposit on the silvering-dish can be removed by means of nitric acid, and transferred to the waste-bottle.

Detection of Dissolved Oxygen in Water. To detect the presence of dissolved oxygen in water, A. Kaiser makes use of a solution of ferrous sulphate in boiled water acidulated with sulphuric acid. This solution is introduced by means of a pipette into a flask filled with the water to be examined; an excess of caustic potash solution is then added, the flask stoppered and shaken. If the water be rich in oxygen, the precipitate remaining in suspension immediately becomes of a yellow colour, ferric hydroxide being formed. If little oxygen be present, only a greenish precipitate of ferrous hydroxide is formed, and with water free from oxygen, the precipitate remains of a greenish-white colour. Small quantities of nitrates or nitrites present do not interfere with the reaction. (*Scientific American*, December 5th, 1903.)

Calibration of an Aneroid Barometer. Support the aneroid in a vertical position on a sheet of plate glass, and cover it with a bell-jar fitted with a two-holed rubber stopper. Make an air-tight joint between the plate and the jar by means of tap-grease. Connect one hole of the stopper to an air-pump, and the other to a simple mercury manometer. Partially exhaust the air from the bell-jar, and read the aneroid and the difference in level of the mercury in the manometer; the actual pressure on the aneroid is equal to the external barometric pressure less the difference in level observed in the manometer. Several readings, at different pressures, may be taken. The readings at pressures greater than atmospheric may be obtained by connecting the apparatus to a single force-pump, providing that the bell-jar is held firmly in position.

A Simple Model of a Geyser. Take a piece of glass tubing 75 cms. long and 5·8 mms. internal diameter. Draw off one end so as to form a jet 2 mms. in diameter. Bend the tube to an obtuse angle at a point 35 cms. from this end, and also bend it to a right angle 10 cms. from the other end. Connect a small funnel to the latter end, clamp the tube in a vertical position, and pour in water until the tube is full. Heat the tube near to the obtuse-angled bend; the generation of steam will force the column of water through the jet with great violence. After a few minutes steam will again be formed, and the operation will be repeated. (*School Science*, November, 1903.)

A Method of Testing for Carbon Dioxide. Fit a one-hole rubber stopper into a test-tube in which the gas is to be evolved. Draw a few drops of lime-water into a small pipette and insert the lower end of the pipette through the rubber stopper. The generated gas forces the lime-water into the bulb of the pipette and there bubbles through. (*School Science*, November, 1903.)

Cell for Measuring the Resistance of Liquids. W. Dinwiddie. A glass tube of uniform bore is cut and the ends ground to an exact length of 1 metre. Short pieces of tube of a much greater diameter, with the ends sealed and a large hole blown out in the side, are fitted on the ends with corks. Flat, amalgamated copperplates placed close to the ends of the tube form the electrodes. The mean cross-section is determined by filling the tube with mercury, which is poured out and weighed. The apparatus is then filled with the electrolyte, and the resistance measured by Kohlrausch's method. The resistance of the electrodes and connecting wires must be first determined by

placing them together, and the difference will give the resistance of the liquid in the tube. (*Science Abstracts*, No. 64.)

Electrical Conductivity of Flames. P. Lenard describes simple experiments to prove the presence of positive ions in flames. Platinum plates are fixed vertically on opposite sides of a Bunsen flame, and maintained at a high potential difference by connecting to the terminals of a Wimshurst machine. If a platinum spoon containing a salt giving a coloured flame is held in the flame, the coloured portion is bent across towards the negatively charged plate. (*Science Abstracts*, No. 66.)

Simple Apparatus for Observing Diffraction Phenomena. The apparatus described by G. Foussereau consists of two metal tubes, one sliding in the other. A metal plate with a small central hole or slit is mounted on a cork ring inserted in the outer end of the larger tube. A low-power eye-piece mounted in cork is inserted in the small end, to serve for projecting images on a screen, 6 to 30 cms. distant. Between the two a smaller hole or fine slit may be mounted on another cork to show diffraction fringes. A needle, or the straight edge of an opaque object, may be mounted in conjunction with it to show shadow phenomena. (*Science Abstracts*, No. 65.)

NATURE-STUDY.[1]

By OSWALD H. LATTER, M.A.
Charterhouse.

A CONCISE definition of "nature-study" seems almost impossible, nor shall I attempt one; for we probably all have a pretty clear conception of its scope. I find that the numerous nature-study books which have appeared during the last few years deal with topics that would be classed under astronomy, botany, geology, meteorology, physical geography and zoology. In whatever category any lesson may come the objects are clearly the same, viz., to train the eye to observe what it sees, the mind to think about what is seen, and to acquire knowledge of things and processes at first hand; to awaken intellectual interest, and to inculcate a habit of mind that shall influence the whole character. It is no small gain that, incidentally, the virtues of neatness, dexterity, and patience are encouraged and the æsthetic side of the mind developed to appreciate beauty of form and colour. But I take it that the essential thing is *interest*—interest in learning, interest in personal endeavour. Mental drill and discipline are not the sole consideration. There is such a thing as unconscious discipline, both mental and otherwise, that is the product of genuine and fruitful interest.

It is clear that if the object in view is to be realised, the subjects handled by any teacher must concern primarily those things that come under the frequent notice of his pupils. Matters astronomical and meteorological are much the same for all of us in England, but otherwise the physical features and the fauna and flora of the school grounds and their immediate neighbourhood claim first attention. No orderly sequence of lessons is required. Each lesson can stand by itself, though in many cases—*e.g.*, experimental botany or meteorological records—the "lesson" may, indeed must, run on for several weeks, occupying perhaps a few minutes only of each hour allotted to nature-study. Clearly also the season of the year will go far to determine the choice of material.

There is no doubt that this informal kind of teaching appeals strongly to many learners, it does interest them; they le willingly. The very fact of frequent change makes it peculia suitable to the young. To tire soon is as natural a characteris of the very immature mind as of the very immature bo Before the present audience it is hardly necessary to labour show how, apart from the valuable habits acquired, an intellig appreciation of the processes of nature is an inestimable p session to a man in after-life, be his business or profession wh it may.

May I digress for one moment to draw attention to the val of this "study of things" in connexion with other branch of education? We have probably all experienced the difficul of getting young pupils to write anything like a respectab English essay showing consecutive thought and power of e pression. And why? In nine cases out of ten because the b has neither knowledge nor ideas—he is gravelled for lack matter. Now I venture to say that if you set a boy to wri an account of what he has seen and found out for himself wi no apparatus except that with which Nature has provided hi he will find his tongue and produce something worth reading in a style perhaps open to criticism and improvement, b bearing the impress of the individual, and not the stamp of t machine mould.

I wish to emphasise the absence of apparatus as a desira condition, and on this account I regard simple nature-study an educational instrument of higher value, at least in the case young pupils, than either physics or chemistry. I am w aware that the teachers of these subjects are most careful reduce their apparatus to the simplest. But I do feel stron that a boy whose training in scientific method is conduct entirely in laboratories and class-rooms is in danger of acquir the habit of being in the observational mood only when s rounded by the familiar odours and appliances and clad in t laboratory apron. One who observes only in the sanctum of t laboratory is very liable, I think, to pass through the ou world with his eyes closed. His scientific training has n really brought him into touch with the things of everyday l with the more conspicuous phenomena of the world in which lives. The habit of observation does not pervade his life, b needs to be stimulated into action by the sight of the balan the rule, the thermometer, the microscope, the dissecting-di by the contact with scalpel and forceps, by the music of t Bunsen burner, by the fumes of the incense of chemistry. L me not be thought to be making any attack upon chemistry a physics. I realise their value and their superiority in ma respects to the biological and geological sciences. B affording training in exact reasoning, accuracy, experimen ingenuity, and so on, they are undoubtedly of far greater wor than biology or geology. But they are inferior in the oth respects that I have just indicated. The two sets of subje are, for purposes of general education, complementary to o another—both are necessary. But I venture to think that t habit that is fostered by nature-study is a necessary precursor the more systematic and exact course of the chemical, or physic or biological laboratory. To start scientific training by a cou of practical work in the laboratory, without something li nature-study as a preliminary or concomitant, seems to me t unlike taking a child to church without previously training it home in habits of obedience, reverence and truthfulne Perhaps I am prejudiced, but I consider that for the ordin man it is of more importance that he should be trained to t his eyes and wits habitually as he goes about the affairs business than that he should have gained those undenia valuable attributes that are produced by the more exact scienc The best training is, of course, a combination of the two. I for the reason just mentioned that I much regret that wha may term "field subjects" are entirely excluded from the Ar

[1] Abridged from a paper read at the annual meeting of the Association of Public School Science Masters.

examinations. If there is a profession in which the instinctive habit of noticing the things of the open-air world, and of rightly interpreting the observations, is of value, it is that of the soldier.

However, I believe that "nature-study" has come to stay, and will ere long take a regular place in the early stages of our education. A healthy child is by nature both inquisitive and observant. It is one of the worst blots upon our school system that this innate desire for knowledge is killed outright by the time that most of our pupils have reached the age of 17, while the powers of observation become specialised and restricted to watching the motions of spheres of various dimensions, and dexterity to adapting the hand or foot in accordance with the properties so ascertained.

What, then, is the proper place of "nature-study" in the general scheme of science-teaching? I wish especially to elicit expressions of opinion upon this point. At my own views I have already more than once hinted. It seems to me to be admirably suited for children of the ages of from 9 or 10 to 13 or 14; but for older pupils I confess that I should prefer something more systematic, more advanced. We may perhaps employ it profitably in the two or three lowest forms of our public schools, but it is in the preparatory schools that, in my opinion, nature-study should be especially encouraged. It can be begun at a very early age, and by the time a boy is 13 he ought already to have his eyes and wits well trained in the right direction, his interest keenly aroused, his mind alert and capable of passing on to higher work and more systematic study and "grind"—for "grind" must come, though it need not be the grinding of the unwilling ass! This Association would do well to approach the Association of Preparatory Schoolmasters with a view to obtain some common action on their part. It is an infrequent thing for a boy to be placed in a high form on first coming to a public school—he has been brought to a fairly high standard in classics and mathematics; but how seldom do we find such boys really capable of joining a science division correspondingly high! (assuming we are fortunate enough to have graded science divisions, a right denied to many). As a rule, their scientific training has been much neglected, and they are far inferior to boys who have worked their way up to the same place through the lower forms of the public school, where, at any rate, some little time per week has been spent at science. Such a one-sided early training is permanently bad for the boy, and makes our task also the more difficult.

METHODS OF TEACHING ENGLISH.[1]

By the Hon. and Rev. Canon E. LYTTELTON, M.A.
Master of Haileybury College.

WE English are much given to the practice of self-depreciation. I do not say that all foreigners would agree with this remark unless it were considerably modified, but some truth there is in it nevertheless, to the extent anyhow that we often forget what is greatest in the inheritance bequeathed to us by our forefathers: we do not mind belittling that inheritance, and in no respect is this so true as in that of the splendid mass of literature which has come down to us from former ages. One would suppose that it would be a matter of pride in us to magnify rather than to under-estimate the greatness of this national endowment. But our attitude towards it is curiously illustrated by a modern controversy in which one side stoutly asserts that whereas for centuries it has been supposed that two supreme geniuses existed in the reign of Elizabeth, the real truth is that there was only one. To prove this somewhat depressing assertion, a vast amount of research, time, temper, and ink have been expended. But what a pity it is that these historians have not given their energies to show that instead of the works of Shakespeare or Bacon being the outcome of one English mind they are in reality the product of no less than three or even more. Think how our retrospect of English life would be enriched! If we were not so modest about our own past we should even now form a society to accomplish this task, and I almost venture to suggest that the undertaking should be looked on as a necessary outcome of this Conference. But, to come to rather closer quarters with my subject, I will assume that there is one grand object before us: so far from wishing to belittle our own past, we all of us wish to train boys and girls to grow up worthy of this splendid inheritance; with dispositions ready to show it honour, and with minds capable of responding to its message.

Now, in thinking how to do this, we shall do well to limit the subject carefully, or else we shall spend the whole of this afternoon in discussing wholly different topics much in the same way as a lot of windmills on different hill-tops swing their arms in their own way and at their own pace, each promising a grand collision with its own neighbour if the conditions were more favourable, but, as it is, being too remote even to touch.

English may be taught historically, that is, either (*a*) the history of the words, or (*b*) of the literature. I propose to say nothing on either of these very interesting topics.

Next we have these subdivisions of the subject. A child may be taught three ways of dealing with the English language—talking, reading, and writing. Talking may be divided into three heads: (*c*) how to talk distinctly, an exceedingly rare accomplishment at the present day; (*d*) how to talk fluently or eloquently; (*e*) how to talk sense. The second, reading, divides into (*f*) and (*g*); (*f*) how to read aloud well, (*g*) how to read to oneself profitably.

The third, writing, divides into three: (*h*) how to write legibly; (*i*) how to write good English; (*j*) how to write good sense.

Now of these topics I put one aside with a brief remark. Illegible writing has become, ever since the establishment of the penny post, a growing curse of modern life. It is no joke for a busy man to receive an illegible letter. It may well be that the letter is not worth reading, but there is no proof, though there is high probability, till you have deciphered it; and there is no apology so superfluous as that of a stranger who asks one to forgive him for having his letter typewritten—this being almost always an act of kindness, though the boon is frequently spoilt by the autograph signature being added at the end.

The remaining topics are largely occupied with different forms of utterance and with reading; expressing ideas and taking them in; and, as to utterance, we have to aim not only at the pen of a ready writer, but at the least inditing of a good matter. The topics, however, are connected by this fundamental fact. If a boy can be made to speak quite clearly and in a pure accent, he adds not only to his neighbours' ideas, but to his own. What is read aloud conveys a fuller message, and strikes with a more robust impact on to, and lives longer in, the mind of the reader himself. Sometimes this is a great pity, especially it may be so when the reader is reading his own composition; but if he is reading an English classic much of what he gains depends on the tone of his reading and the expressiveness of his voice. Now, in this matter, a vast deal remains to be done in English schools.

Has anyone here considered the outlook if the present degeneracy of accent continues? Perhaps I am bringing to Yorkshire a piece of strange information when I assert with all confidence that the cockney accent is spreading all round London higher and higher up the social scale. What is to be the future of England if, as it spreads northwards, one of the north country dialect accents takes it into its head to spread

[1] Abridged from an address delivered at the North of England Conference at Leeds in January, 1904.

southwards? What will happen in the midlands where they meet? But this does not at all exhaust the prospect. We thrill with pride when we are told that English is to be the language of the world some day; but what English? Why, the native blend of north and south with a rich infusion of Australian, Canadian, and S. African phonetics welded together by the proud consciousness of an unassailable commercial system; or if it be by that time not quite unassailable, think what it will be to discuss tariffs all day in the vowel sounds of three centuries hence! I can't say what ought to be done; suffice it that the evil is very near.

Remembering, therefore, that utterance affects the growth of ideas, we do not forget the great part that should be played by lessons in reading aloud, occasional acting, and constant insistence on articulate and completely finished answers in form. A boy can never learn to be a speaker if he is allowed to get marks for a mumbled and unfinished answer to the master's question. But we must not forget that if we turn him out a fluent speaker we have not done by any means all. A fluent speaker who has nothing to say is worse than a stammerer or even a mumbler, and I confess to having wished sometimes that a public speaker were a little less articulate even than he is, as one might then look for repose in the enjoyment of one's own thoughts. So I pass on to the all important subject of the development of ideas in the mind, with this preliminary remark, that the reason why young people seldom care to read really good literature is that their own ideas are undeveloped and cannot rise up in response to the lofty thoughts of the writer whose volume they are handling. Similarly, if it is poetry or poetical prose, they fail to appreciate the beauty of the rhythm because they have never heard it properly read aloud, the only relief from their own recitation being that of their form master, which is often rather worse because rather louder.

Here then we see the central importance of teaching boys to write English: it is the best way of encouraging the healthy growth of ideas, necessary to all intelligent reading. But this is only the case if the pupil's writing is the putting into clear shape his own ideas already dormant in the mind. Very little, if anything, is gained by making him rummage for information in a book and reproduce it with some slight verbal alterations. Subjects must be found about which the pupil knows something but on which he has not thought much. Prof. James Ward once remarked that he knew no one, man or woman, who had not more facts in their heads than they were able to arrange.

This is singularly true of all of us. We all have memories far too strong in proportion to our thinking powers: the lumber room is spacious, though we are always complaining that it holds so little, but the machinery for sorting the lumber is absurdly inadequate. Now in quite young boys and girls of ten to thirteen years of age or even earlier you can always develop the dormant faculty of arranging facts. Tell them a simple story, and see which can reproduce it adequately and lucidly in the fewest words.

Here is a real training in composition and orderly marshalling of knowledge.

Mr. Lyttelton then gave an oral exposition of the method of teaching English composition now adopted at Haileybury.

The Executive Committee of the Incorporated Association of Assistant Masters has passed a resolution stating it "regrets that the London County Council, in preparing a scheme for the constitution of an Education Committee for London, has decided against the co-optation on the committee of 'persons of experience in education,' thus reversing the policy which the Council adopted in connection with the Technical Education Board, a policy which is compulsory upon all education authorities under the principal Act of 1902."

POINTS OF VIEW.

There are millions of children in this country who, fr babyhood up to the age of fourteen, are drilled in readi writing, and arithmetic upon a system the result of which is t when they attain the age of thirteen or fourteen they can read, write, or cypher. If they have acquired a small smatter of that knowledge this disappears soon after they leave sch There are thus millions of young persons in this country up whom the enormous sums annually spent out of the rates a taxes have been absolutely thrown away. Children are bo into life with great intellectual capacities—with an extraordina curiosity to know, but they are endowed with a still more res less propensity to do, and the great object of the old-fashione school drill appears to be to repress entirely this natural pr pensity of the child. It is crushed in the name of what called discipline. The questioning which is natural to childre is abolished for a system of answering questions put to th child, and in these answers anything like originality or eagerne is at once repressed by the dictum, "Don't speak unless you a spoken to." After a certain time the individuality of the chil is entirely crushed out, and you have a stolid, quiet, orderl stupid class. I have seen in a punishment book that youn children have been caned for the offence of looking about school. The natural condition of very young children is be met by natural objectless play in which their movements ma be left entirely to the dictates of nature. If we take charge o children at the age of three or four we want not teachers, bu nurses—people who can superintend the children's play an look after their health and natural wants.—Sir John Gorst, the annual meeting of the Association of Technical Institution

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Without criticising Froebelism in its different aspects, th vast majority of those whose business it is to teach will agr that the whole notion of there being a so-called "scienti method" in education—that is to say, the theory that the d velopment of the young is subject to certain universal an immutable laws which enable us to argue (as in chemistry o mechanics, for instance) from the general to the particular— based upon a fallacy of exactly the same character as gave th to such doctrines as the "social contract" or the "divine rig of kings." The germ of this fallacy in education can be trace to the first book of Montaigne's Essays. It was from here th Rousseau borrowed it for his "Emile," it was formulated int an imposing body of theory by Pestalozzi and Froebel an further elaborated by Michelet, and it has received enorm impulse and authority in this country from the writings of H and Herbert Spencer, the latter of whom tricked it out with the fascinating arguments that the great wave of inquiry in th domain of biology had left ready for his hand.—Mr. T. Pellatt "Public Schools and Public Opinion." (Longmans.)

Prussia (and Germany generally now endorses the judgment after a trial lasting nearly seventy years, has deliberately aban doned what may be called the "student-teacher" device for training—a fact which should make our own administrators cautious in following those who desire to introduce the plan here. Without imputing any want of good faith and simply from consideration of the nature of the case, it may be said that the chief danger which threatens the usefulness of that plan is that the student-teacher may sink into a kind of scholastic office boy or doer of odd jobs. Whether school ever was or was not a place of leisure is an arguable question; there is no doubt of the absence of leisure in the schoolroom of to-day. And amidst the continual drive of the term's work such sophistry as "Every thing is practice" is apt to beguile both the student-teacher and those responsible for his training. A case is known to the

writer where one-fourth of the training period was spent by the novice in helping to fit up a new laboratory (he could not learn too much of so practical a thing) and the remainder chiefly in clerical work for the headmaster (so needful to gain experience in school-keeping, you know), this being varied by occasional and unsuccessful attempts to teach boys "out of his own head." —PROF. J. W. ADAMSON. "Our Defective System of Training Teachers." (Ginn.)

Let me tell you a story. Last summer one of our students, who was just completing his second year, came to me and said that he had been rowing bow of his college boat, that the boat had done very well on the river, and was ambitious to enter for the Henley Regatta, that the Boat Club had just passed a resolution "that the college boat row at Henley provided that bow can be present there." He then told me that he feared that the day of the Regatta coincided with the date of the Certificate Examination—what was to be done under the circumstances? We telegraphed to the Board of Education, and ascertained that the two great events did not interfere with each other. Yet how many people would believe that the bow of a winning boat at Henley was intending to pass the rest of his life as an elementary schoolmaster?—MR. OSCAR BROWNING, at a meeting of the Metropolitan Board Teachers' Association, January 23rd, 1904.

There are two aspects of the Grammar School which ought to be emphasised. One is, that a Grammar School which is developing its activity at the expense of this humane ideal is a bad Grammar School. It is growing away from its peculiar and necessary function. It is not performing its proper part in the educational organism; it is turning itself into a deformed limb, an abortive member. The other aspect is that the Grammar School which is playing its proper part is not going to allow itself to be cut off or starved down. It is not going to be turned into a mere literary institution for the benefit of a few. The really well developed type of Grammar School claims and can produce every sort of proof to back its claim, that it represents a spirit in education which ought least of all things—in these days, least of all days, in large commercial towns least of all places—to be restricted to those few who aim at a professional career. It is just because we are so practical nowadays, just because we are forced by modern conditions to be so very technical and so very utilitarian, that we most need the humanising and broadening and tempering influences of general culture. Here, then, the Grammar School must take a firm stand. It is a limb of the educational organism which some are trying to distort or deform, which others are trying to amputate or deprive of a free circulation by tight bandages. The Grammar School must refuse to submit to either operation.—The REV. W. H. KELLING, at the Leeds Conference, January, 1904.

I desire to indicate the one clear line of demarcation that can be drawn between different types of Training Institutions. The task of the teacher (and therefore the qualifications we desire for him) varies greatly in proportion to the variation in age and in development of the scholars. The infant of four and five years needs a trained teacher to teach him; the pupil of fifteen also needs a trained teacher, but the training for the first office, though equally honourable and important, is largely different from that required for the second. The pupil of fifteen is becoming independent, and can help himself to some extent without skilled pedagogic art on the part of his instructor. Both types of scholar ought to be taught by teachers who possess the double qualification of academic knowledge and professional skill, but the little child will do better with a teacher who is thoroughly skilful in her profession, although she is a poor scholar, whereas the pupil of fifteen will do better with a teacher who is well qualified in academic pursuits, although his professional equipment may be more scanty. In other words, I wish to base the line of demarcation between various types of teacher upon the double qualification required of every trained teacher: (1) He must be, as far as possible, qualified by a competent acquaintance with the branches of knowledge and art, which fills up the time-table of his classes; (2) he must be skilled in his knowledge of his pupils' minds and habits; he must habituate himself to practise his art upon them, both in teaching and in personal training. We call the first the "academic" qualification, the second the "professional" qualification (the first is necessary to success, but it is not professional because it is part of the common stock of culture).—PROF. J. J. FINDLAY, at the Leeds Conference, January, 1904.

HISTORY AND CURRENT EVENTS.

THE obituary notices of Mr. Herbert Spencer have recalled to us by way of contrast the life of the seventeenth-century English philosopher, who, like his nineteenth-century successor, "took all knowledge for his province." Herbert Spencer was content with little of this world's goods, and in consequence was able to achieve his philosophic task and leave behind him a name for singleness of purpose. Francis Bacon thought it necessary, before he could devote himself to the "advancement of learning," to gain political influence and wealth. The condition of English politics in the beginning of the seventeenth century made it difficult for anyone to rise and Bacon's energies were debased and dissipated in attaining what he regarded as the necessary preliminary to a life of learned leisure. The consequence was that his system of philosophy remained a fragment, and that it is difficult for his advocates to repel the charge contained in Pope's epigram:

"The wisest, brightest, *meanest* of mankind."

THE kingdom of Saxony is considering a "scheme of electoral reform," or, as we should say in England, a Reform Bill. It is interesting to see that they are proposing a return to the system of Estates, partly on the model of the Roman *comitia centuriata*, partly on that of represented classes of the community such as was common in mediæval representative assemblies. Some seats are to be allotted to deputies from various callings, trades and professions. Others are to be filled by representatives of the general community, divided into three classes according to their wealth. In England we have long departed from the system of Estates. The parish clergy dropped out of Parliament in the fourteenth century, the abbots disappeared at the Reformation, and the "boroughs" were disfranchised in 1832. Our present House of Commons, with the exception of the members for the universities, represents districts, not estates. Its parallel in the Roman Republic is not the *comitia centuriata*, but the *comitia tributa*.

WE hope we need not apologise to our readers for once more calling their attention to the contemporary development of the constitution of the British Empire. Mr. Balfour told his constituents at Manchester that, for over a year, there has existed a Committee of Imperial Defence, which is "elastic in its composition." "In the future it ought to be the Prime Minister's committee, constituted by those whom he shall summon." It will contain, indeed has already contained, representatives from the Colonies. How like all this is to the early Privy Councils, out of which the Cabinet has evolved! *Then* it was the King who, for purposes of war, summoned whom he would, and who for many generations was not, at

least formally, responsible to anyone for his conduct of that council. If our parallel is correct, whence is the assembly to come that shall claim to share power with the new monarch in his nomination of the new Council? The British Empire is, for purposes of communication, scarcely larger than the England which required 40 days' notice for a general election.

THE fiscal question is still with us, and that rightly. Never, perhaps, with the exception of the Reform Bills of 1830-2, or the Home Rule question of 1885-6 was such a crisis in the affairs of this nation, at least for a century. It is, indeed, as has been said, a parting of the ways. A recent writer in the *Times* has remarked that the era of Free Trade, which began with the younger Pitt and reached its climax under Gladstone, was a departure from the normal course of the relations between the State and commerce. And to this we may freely assent, whatever our opinions on Mr. Chamberlain's proposals. Without going into the philosophy of the State and its constant tendency to increase or maintain its area of activity, we may grant that States have almost always attempted to regulate commerce and industry with other views than the profit of the individual and his attainment of wealth alone. A very close parallel to our own days may be found by a study of the commercial policy of Edward IV. of England, who legislated against foreign imports of corn and manufactured products in the interests of farmers and other English capitalists and employees as well as to keep money in the country.

ITEMS OF INTEREST.

GENERAL.

THE London County Council in November last referred the Education (London) Act, 1903, to its General Purposes Committee to advise as to the practical steps to be taken for its administration. This committee presented its report at the meeting of the Council on January 26th. The chief subject dealt with in the report is the scheme for the appointment of the Education Committee. Its recommendations for this purpose were subsequently adopted by a large majority. The scheme thus approved by the Council provides that the Education Committee shall consist of forty-eight members as follows:—Thirty-five members of the Council with the chairman, vice-chairman, and deputy-chairman; five women to be chosen for their experience in education; and, during the term of the first committee, five members of the present School Board. But this scheme has yet to be sanctioned by the Board of Education. The Education Acts, moreover, clearly specify that every scheme for the appointment of an education committee shall provide for the inclusion of persons of experience in education, and of persons acquainted with the needs of the various kinds of schools in the area, and this clause of the Act seems to have been insufficiently considered by the London County Council. It is to be hoped, in view of the magnitude and difficulty of the problem of London's education, that the Board of Education will not approve the scheme in its present form. It is of the greatest importance that some experts familiar with the special needs in connection with secondary and higher education should be co-opted as members of the new committee.

IN connection with the centenary of the death of Priestley, the discoverer of oxygen, commemorated on February 6th, it is interesting to recall his experiences as a schoolmaster. Priestley was a minister of religion and his first charge was at Needham Market, in Suffolk, where his stipend, nominally £40 a year, never exceeded £30. To eke out an existence he endeavoured to start a school—with what success his own account will declare—"Like most other young men of a liberal educatio had conceived a great aversion to the business of a schoolmas and had often said that I would have recourse to anything for a maintenance in preference to it. But having no ot resource, I was at length compelled by necessity to make sc attempt in that way: and for this purpose I printed and tributed *proposals*, but without any effect. Not that I thought to be unqualified for this employment, but becaus was not orthodox. I had proposed to teach the classics, mat matics, &c., for half-a-guinea per quarter and to board the pup in the house with myself for twelve guineas per annum. Findi this scheme not to answer I proposed to give lectures to gro persons in such branches of science as I could convenien procure the means of doing; and I began with reading ab twelve lectures on the *use of the globes*, at half-a-guinea. I h one course of ten hearers, which did something more than p for my globes."

SHORTLY afterwards, Priestley removed to Nantwich, wh his slender means again suggested to him the desirability starting a school. His parishioners being more liberal, t attempt was more successful. He says, "In this employme contrary to my expectations, I found the greatest satisfacti notwithstanding the confinement and labour attending it. school generally consisted of about thirty boys, and I had separate room for about half a dozen young ladies. Thus I employed from seven in the morning until four in the afternoo without any interval except one hour for dinner, and I never ga a holiday on any consideration, the red-letter days, as they called, excepted." After this he went immediately to g tuition in an attorney's family till seven in the evenii Priestley was only three years at Nantwich, where he conclud his career as a schoolmaster, though he continued his edu tional work as professor of languages and *belles-lettres* at Warrington Academy. He has left us a striking proof of appreciation at that distant day of the importance of n classical studies as a preparation for business life. "Besi composing courses of lectures on the theory of language and oratory and criticism, on which my predecessors had lectured introduced lectures on history and general policy, on the la and constitution of England, and on the history of Engla This I did in consequence of observing that, though most of pupils were young men designed for situations in civil and acti life, every article in the plan of their education was adapted the learned professions."

AT a meeting held towards the end of last year it was decid that a circular letter should be sent to the various institutio with which the late Prof. Withers was connected, to personal friends, and to the numerous persons who knew work, inviting donations to a fund to be called the Withe Memorial Fund, and that, if the response to this appeal wo allow, the following suggestions should be carried out: (i.) T placing of memorial brasses in the Owens College, Manchest and at Borough Road College, Isleworth; (ii.) The establi ment for a term of years of a travelling scholarship abroad third year students at Isleworth, and the foundation of education library in the Owens College; (iii.) The provision an annual prize or lecture in connection with some pub institution. Any contributor is at liberty to allocate his donati specifically to any one of the above objects, otherwise the c tributions will go to the general fund. Mr. J. H. Gettins, University College, Reading, has consented to act as secret to the fund, and it is requested that all donations should be s to him at that address. Cheques or Orders should be cros Lloyd's Bank, Ltd., Reading.

AN English Organisation Committee has been formed diffuse information and promote the usefulness and success of

First International Congress of School Hygiene to be held in Nuremberg during Easter week and of which we gave full particulars last month. Sir Lauder Brunton is the president of the English committee and the honorary secretary is Dr. James Kerr, Parkes Museum, Margaret Street, London, W. In connection with the Congress, there will be an exhibition of objects referring to school hygiene. The committee intend to open the exhibition before the beginning of the congress and to close it some days after. All objects referring to school hygiene may be exhibited, such as: models of school-houses, with their annexes; treatises on the principles of school-building, on means of instruction, and on the education of children at school and at home; all kinds of school-furniture and means of instruction, especially scientific instruments, school-books and periodicals; apparatus for the medical examination of children and their bodily education, gymnastic appliances and similar objects.

NOTICE has been given by the Admiralty that for the examination for cadetships at the Royal Naval College, Osborne, which will take place in July next, the syllabus of examination will be simplified. The option previously given will disappear, but Latin will be retained as one of the subjects of examination. History and geography will be combined in one paper; arithmetic and algebra will also be combined in one paper, about two-thirds of which will be devoted to arithmetic. These changes are made with the object of bringing the examinations into line with the work of ordinary preparatory schools. The revised syllabus is as follows: (i.) English. (ii.) History and geography. (iii.) Arithmetic and algebra. (iv.) Geometry. (v.) French or German, with an oral examination. (vi.) Latin. Candidates are to take all six papers, but a fixed standard of qualification in each subject will not be required, provided that the general standard of the candidate in other subjects is satisfactory.

THE first conference in connection with the School Nature-Study Union was held on January 30th, in London, under the presidency of Dr. Heath, director of special inquiries and reports to the Board of Education. Papers were read by Mr. C. B. Gutteridge, of Alleyn's School, Dulwich, on nature-study in secondary schools and how its claims may be advanced, and by Miss Johnson, on nature-study in a village elementary school. It may be added that the honorary secretary to the School Nature-Study Union is the Rev. C. Hinscliff, Bobbing, Sittingbourne.

THE date of the first general meeting of the Classical Association of England and Wales has been altered, in consequence of representations made to the Council, and is now fixed for May 9th, 1904, at Oxford.

ETON has set a good example in its support of the Classical Association, the Headmaster, the Provost, and thirty of the staff having enrolled themselves as members.

THE next examination for English student-teachers in French Training Colleges will be held in London during Easter week. Students who enter these colleges pay £1 into the college funds, and devote a certain amount of time not exceeding ten hours a week, to conversation in English with the French students. In return they receive board and lodging, and permission to attend all the classes in French history, literature, etc., at the college. Forms of application may be obtained from Miss Alice Gardner, Newnham College, Cambridge, or Miss Williams, President of the International Guild, 6, Rue de la Sarboonne, Paris.

The Senate of the London University have appointed Mr. Irwin, F.R.S., a member of the Governing Body of the Polytechnic.

AT a meeting of members of Congregation at Oxford on February 9th, four resolutions dealing with the question of compulsory Greek were submitted. The effect of the resolutions, which were all adopted, is that students reading for honours in science or mathematics may take an optional alternative for Greek in Responsions and in the Holy Scripture examination, and that the Responsions alternative will include both a scientific or mathematical subject, and also French or German translation and composition.

WE have received a copy of the report of the conference on educational questions held in connection with the Incorporated Association of Headmistresses last October. Copies may be obtained, price 1s. 3d., post free, from Miss R. Young, 92, Victoria Street, Westminster, S.W.

THE Hereford County Council has decided to purchase the County College, which will be used for the purposes of an undenominational training college for women. Attention is being given to the problem of how best to obtain teachers specially trained to give education in subjects suitable for agricultural districts. With a college capable of doing this it is thought the Council will have a staff also able to give instruction to the existing teachers in such subjects.

LORD ALVERSTONE opened a new technical institute at Newport, Isle of Wight, on January 30th. The building will cost about £12,000, of which £5,000 has been contributed by Sir Charles Seely. The building will for a time also be used as a secondary school for the western half of the island.

AN international congress of mathematicians will be held in Heidelberg from August 8th to 13th, 1904. Since the hundredth anniversary of the birth of the German mathematician Jacobi will fall in the same year, it is intended to commemorate this event by an address to his memory. In connection with the congress an exhibition of mathematical models and of recent mathematical literature is to be held. Full particulars can be obtained from Prof. Dr. A. Krazer, Westendstrasse 57, Karlsruhe.

WE have received a copy of the Science Syllabuses in Physics and Chemistry prepared by Dr. Stewart for the Special Subjects Sub-department of the School Management Department of the School Board of London for use in London board schools. The syllabuses are excellent, and serve to illustrate how great has been the improvement in methods of teaching science in recent years. Mere didactic instruction is giving place to experimental inquiry, and where possible arrangements are now made for the pupils themselves to perform the necessary experiments. Courses of work are provided suitable for the children in elementary and higher-grade schools, and the requirements of pupil-teachers are duly regarded.

THE first volume of the report of the Commissioner of Education for the year 1902 of the United States Bureau of Education has been received. In its 1,176 pages are to be found articles dealing with important educational problems in many parts of the world. Merely to enumerate the subjects dealt with in the volume would occupy more space than is available, but we may say that any teacher who can secure access to the report will find something in its pages of interest and value. We notice that the number of secondary school pupils enrolled in the public high schools of the United States during 1901-2 was 566,124, an increase of about 8,000 over the previous year. The number of similar pupils in private schools was 168,636, a decrease in the same period of nearly 9,000. The increase of secondary school pupils in public schools is due to the policy adopted by large villages and

counties to provide for free secondary education from public taxation. An interesting chapter is contributed by Prof. Foster Watson and contains brief biographical notices of the pioneers of the new education of the sixteenth century in England. An account running to 68 pages is given of education in the United Kingdom, and it is well supplied with statistical information. Students of education in all parts of the world know and value these reports and are deeply indebted to the Washington Bureau of Education for its liberality in distributing copies to the chief libraries everywhere.

AT the end of 1902 there were in Queensland in operation 991 schools, including 449 State schools, 539 provisional schools, and three schools at benevolent and reformatory establishments. For 1903 the gross enrolment was 92,094 in State schools and 16,336 in provisional schools. The average daily attendance was 61,821 at State schools and 10,988 at provisional schools. There are ten grammar schools in Queensland—six for boys and four for girls. Separate schools for boys and girls have been established at Brisbane, Ipswich, Maryborough, and Rockhampton, and schools for boys at Toowoomba and Townsville. Each grammar school is governed by a board of seven trustees appointed by the Government, and of these four are nominated by the Governor-in-Council and the others by a majority of the subscribers to the funds. The trustees hold office three years, and are eligible for re-election. They are empowered to make regulations for the determination of fees to be paid by the scholars, for the salaries to be paid to the teachers, and generally for the management, good government, and discipline of the school. Endowment at the rate of £1,000 per annum is paid by the State to each grammar school.

WE have received a copy of *Knowledge and Scientific News*, the first number of the new paper amalgamating *Knowledge* with *The Illustrated Scientific News*. Among other articles in the first number are "Ancient Calendars and Constellations," by Mr. E. W. Maunder; "A Motor Aeroplane," giving an account of Mr. Wright's experiments; and "Giant and Miniature Suns," by Mr. J. E. Gore.

SCOTTISH.

EDUCATION, for the third year in succession, occupies a place in the King's speech. This time it is Scotland's turn. The long expected measure is referred to in these vague and non-committal terms: "A Bill to amend the laws relating to education in Scotland has been prepared for your consideration." Sir Henry Campbell-Bannerman, in referring to this notice, expressed the hope that the Bill would be in harmony with Scottish traditions, and would provide for adequate popular control. He was glad that the measure was in charge of Mr. Graham Murray, who was a real Scotsman who knew Scotsmen and was known of them. As Mr. Murray has already given formal notice of his intention to introduce the Bill at an early date, speculation as to the nature of the measure will not remain long unsatisfied.

THE Aberdeen University Association in Edinburgh at their annual dinner had as guests of the evening Dr. George Ogilvie, late headmaster of George Watson's School, Edinburgh; Dr. Alex. Ogilvie, late headmaster of Gordon's College, Aberdeen; and Dr. Joseph Ogilvie, rector of the Established Church Training College, Aberdeen. These gentlemen are the surviving members of a family of five brothers, all of whom were schoolmasters, all of whom attained the highest scholastic and academic distinctions, and all of whom won in rare measure the love and reverence of their fellow men. The eldest, Mr. William Ogilvie, formerly rector of Morrison's Academy, and the youngest, Dr. Robert Ogilvie, late H.M. Chief Inspector of Schools, have passed away, but they will be long remembered by all who knew them as the kindliest and most lovable of men. The story of the rise and progress of the Ogilvies is typical of the fortunes of many distinguished Scotsmen all over the world, but it is very exceptional to find one family contributing five members to the same profession, and all attaining the highest distinctions. The Ogilvies may be claimed as among the highest products of the old parochial system, the finest "capacity catching" machine that has ever been known. With no advantages of birth, as these are generally known, the brothers by their own indomitable energy and native grit forced their way at an early age to the front, and for nearly half a century, in one sphere or another, have continued to mould and influence the lives and characters of countless Scotsmen and to shape the educational policy of the whole country.

THE Executive Committee of the Carnegie Trust have framed for this year their scheme of endowments of post-graduate study and research on the same lines as that of last year, full particulars of which will be found in THE SCHOOL WORLD for April, 1903. Application forms for scholarships, fellowships and grants may be had from the Secretary, the Merchants' Hall, Edinburgh. The forms must be filled up and returned to the Secretary on or before the 1st April, and not, as formerly, on or before May 1st.

MR. BALFOUR presided at a dinner given to Prof. Butcher who last year vacated the chair of Greek in Edinburgh University. Sir Robert Finlay, Mr. Graham Murray, and a company representative of all interests in the northern capital, supported the Prime Minister. Mr. Balfour, in proposing the toast of "Our Guest," said they were not met to celebrate the academic triumphs of Prof. Butcher, but, as Scotsmen, to express to him that they had adopted him, once and for all, as one of themselves. This was an honour and mark of affection rarely bestowed, for there was a common Scottish theory, never formulated but effectively carried out in practice for the past 300 years, that every country had need of Scotsmen, but Scotland had no need of the citizen of any other country. This theory had worked well in practice, and it was only in the case of a few select souls like the guest of the evening that any exception was made.

SPEAKING of the value of a classical education, Mr. Balfour said he was sorry to say he had been from very early years inclined to gentle scepticism upon the supreme value of some of the subjects which Prof. Butcher taught. Lord Cockburn was credited with the view that any education which excluded classical training led up to ignorance and self-conceit. It was reassuring to him to think that he had spent all the years between eight and eighteen in learning classics, and if that constituted a classical education he hoped he might be absolved from the double-barrelled charge. He confessed, however, that ten years of arduous study had only enabled him to acquire as much knowledge of classics as enabled him without dishonour to get through the "Smalls" at Oxford.

PROF. BUTCHER, in reply, said that he bade good-bye to the northern city of romance and enchantment with infinite regret. His twenty-one years' stay in their midst had enabled him to take "a look far ben'" into the Scottish heart, and he appreciated fully all its warmth and fervour. He had had a subject to study which of all others was perhaps the most many-sided, the most opulent, and most inspiring. Greece was not so much a country as a geographical expression, as a mode of feeling and thinking in a certain direction of the human mind. Whatever might be the fate of Greek as a subject of a university curriculum, he

certain no university could influence and elevate the national life unless inspired by the Greek ideals.

THE Educational Institute of Scotland has issued a circular to Members of Parliament appealing for a reconsideration of the Superannuation Act of 1898. In a brief statement of the genesis and history of the Act, they show that its provisions were conceived exclusively with reference to the conditions that prevailed in England and Wales. No evidence was invited from Scotland by the parliamentary committees that framed the measure, and no opportunity was given for obtaining the views of the Scottish teachers regarding it. Further, it was expressly stated by the Departmental Committee on the subject that there was an essential difference between the educational system of Scotland and that of England and Wales, and that this difference would materially modify their recommendations if Scotland alone were being considered. It is pointed out that a teacher in receipt of a salary of £300-£400 a year is compelled to retire at the age of sixty-five on a pension (*sic*) of £40 to £46. The Institute asks for the support of the Scottish Members of Parliament in regard to the following proposals: (i.) That the teacher's contribution should be proportional to salary; (ii.) that the Government and the local authority should each contribute to the superannuation fund a sum equal to the teacher's contribution; (iii.) that the power to supplement pensions be meanwhile restored to school boards in the case of existing teachers who have accepted the Act; (iv.) that the age of retiral should be 55-60 in the case of women, and 60-65 for men.

IRISH.

THE death of Dr. Salmon, Provost of Trinity, on the third anniversary of the death of Queen Victoria, means the loss of the most conspicuous and noble figure in Irish academic life. Apart from his rare distinction of combined pre-eminence as a mathematician and theologian, he had a great influence on Irish school education both as provost of Ireland's one real university and as a member for many years of the Intermediate Board of Education. He will be remembered by many for his simple sincerity and transparency of character.

Lustra quater supra iam quattuor egerat aevo:
Praestiterat numeris, religione, fide.

AT the opening meeting for the year 1904 of the Association of Intermediate and University Teachers, it was stated that the Association had drawn up a pamphlet on the condition of secondary school teachers, especially assistant-masters, in Ireland, which it was proposed to publish. The object is to ventilate the unsatisfactory condition of the tenure, salary and prospects of the teaching profession, and to arouse public attention to the urgent necessity of improvement. Authorities must face this problem, the sooner the better.

THE Rev. T. A. Finlay, S.J., Commissioner of Intermediate Education, who was one of the members of the Mosely Commission, has, since his return from America, delivered two addresses bearing on his experiences there. The first was at the annual general meeting of the Dublin Educational Society, and was entitled "Some impressions of American Schools." After explaining that America, like ourselves, was experimenting in education, he pointed out the differences between Irish and American schools and teaching. First came the American zeal for education, shown partly by private and partly by public expenditure. The great technical schools and colleges there were nearly all paid for by individuals, and no less than one-third of the municipal rate was paid to education. There were far more women teachers in America, where teaching, however, stood on a different plane from its position in Ireland, and was regarded as on a par with law or medicine, and a teacher was compelled to qualify himself or herself by a course of training equally long, severe and technical. The ideals, too, are different: we are content to give a boy information and teach him to think; in America they think more of turning out quick-witted boys who can bustle through life.

THE other address was an interesting lecture in the University College, Stephen's Green, Dublin, on "Industrial Education." Father Finlay pointed out that the social element was very largely neglected in our schools; children were not taught the nature and structure of society and the duties that would devolve upon them as citizens. For success in industry two things were indispensable—a knowledge of the forces of nature and a knowledge of the means of manipulating those forces. Hence in foreign schools children had their faculty of observation trained in the open air and in direct contact with nature. He criticised the technical instruction of Ireland and England, and expressed an adverse opinion on the common trade schools, but approved of the apprentice schools attached in America to the great factories, where apprentices were taught the principles underlying the practice of their everyday work.

DURING the past month the university question has been widely discussed, but it is difficult to say how much progress has been made towards a solution. The so-called Dunraven scheme has obtained much support. The hierarchy of the Roman Catholic church have approved of it, a long list of approving Roman Catholic laity has appeared in the daily papers, Captain Shawe Taylor has abandoned his conference with a declaration that the Dunraven scheme renders it unnecessary, and several public meetings have given it support, notably one held just before the opening of Parliament in the Dublin Mansion House, where the Lord Mayor took the chair, and the chief speakers were the O'Conor Don and Archbishop Walsh. On the other hand, the Orange party are entirely opposed to any Roman Catholic university or college, and at a meeting in Belfast, Lord Londonderry stated, what has been confirmed since the opening of Parliament, that the Cabinet has no intention of introducing this session any Bill dealing with the university question. It is clear, too, that Trinity College is not in favour of a Roman Catholic University or a college for Roman Catholics in Dublin University; it is urged that federal universities have been failures in England and are being given up, and that the best plan would be a Roman Catholic and other colleges in connexion with the Royal University (as proposed by the recent Commission). If the latter proved successful, it might be further developed, but the Dunraven scheme would be fatal to Trinity. On the other hand, Trinity College is prepared to take steps to make itself still more undenominational.

The King's letter authorising the opening of Trinity College to women, and the conferring upon them of its degrees, has been published in the daily press; it only remains now to arrange and develop a satisfactory scheme for the working of this new and great departure.

WELSH.

AN important meeting of the Court of the University of Wales has been held at Shrewsbury, to consider an application from the Swansea Technical College for admission into the University of its students in courses of study for degrees in science and applied science. At present for degrees in arts and science only students in the three constituent colleges can graduate in the University of Wales, viz., from Aberystwyth, Bangor, Cardiff. The following resolution was passed: "That this court is of opinion that the appeal of the Swansea Corpora-

tion can best be met by an extension of the charter that will give the University power to admit to certain privileges any institution possessing adequate facilities, in point of equipment and staff, for the teaching covering the whole course of work for an initial degree in any faculty; these privileges being at least those of presenting candidates for degrees in that faculty under Article XIV. of the charter." This resolution was moved by Dr. R. D. Roberts, of London University, seconded by Mr. Brynmor Jones, M.P.

THE Men Students' Representative Council have done some useful work in the University College of Wales, Aberystwyth, in organising a men's daily dinner. The women students at Aberystwyth live in the College Hostel for Women. There is a men's hostel, but as yet, unfortunately, it is only on a small scale. However, the men students, to the number of over 100, dine together at a local hotel, and so far the experiment seems thoroughly successful. We understand that Sir Lewis Morris has counselled the project for some time past.

IN the Merioneth Education Committee a draft scheme has been submitted for the instruction of pupil-teachers. For a three years' apprenticeship the scheme requires the first two years of the pupil-teacher to be devoted wholly to instruction in the county intermediate school, and the third year to be half teaching and half learning. For two years' training, the first would be wholly at school, and the next half-time. During the third year the salary would be £30 annually, and the treasury grants would be payable to the county schools where the pupil-teachers had been trained. The scheme was unanimously adopted.

CARNARVONSHIRE is moving in the question of the teaching of Welsh. The Staff and Curriculum Sub-committee of the Education Committee have recommended to the committee the publication of a Welsh recitation-book for the use of schools. Prof. J. Morris Jones and Mr. T. J. Williams have placed their services at the disposal of the committee as compilers of such a book. It was further recommended that a prize of ten guineas should be offered for the best manuscript of a Welsh song-book. Letters were read from the Carnarvon district local managers and from the Carnarvonshire Baptist Association asking for Welsh to be taught systematically in the elementary schools.

AT Llanidloes, Mr. Humphreys-Owen, M.P., said the Bishop of St. Asaph had ceded the two main points which the Welsh County Councils were defending—namely, local control of the schools and the abolition of sectarian tests. In return he asked for undenominational teaching in the schools and the right for every denomination to provide for the religious instruction of their children in their own faith at their own cost. There still remained, however, the question of the time at which this instruction should be given, and, with good-will on both sides, he thought a settlement might be arrived at.

SOME interesting particulars have been given by the head-master of the Alun County School, Mold, Flintshire, showing the growing influence of even a small county school. "Only this week," he says, "I received a visit from one old boy who, after spending some months in Burmah and in Australia, traded among the South Pacific Islands for two years, and is now on the point of taking up an appointment in Costa Rica, Central America. Last week I received a letter from another who has just obtained a post in the West Indies. The other day I heard from another old boy who fills an influential position in Australia. I have heard of another who is prospering in Mexico. Old boys are found in Canada, the States, and South *Africa.*"

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

J. V. von Scheffel, Der Trompeter von Säkkingen. Edited by E. L. Milner-Barry. xxii. + 280 pp. (Macmillan.) 3*s.*—This is, we believe, the first English edition of an epic which enjoys unparalleled popularity in Germany. Mr. Barry has written a pleasant account of the author, of the scanty historical basis of his tale, and of the language, metre, and style. The text has been skilfully abridged; the notes are admirably to the point. Mr. Siepmann, in whose series the volume appears, gives, in addition to the usual words, phrases and passages for translation into German, an interesting and helpful section on word formation. We recommend the book for a fairly advanced class on a modern side.

Wilhelm Hauff, Die Geschichte von Kalif Storch. Edited by Prof. A. Weiss. 46 pp. (Hachette.) 6*d.*—This is the first volume of another cheap series; Messrs. Blackie are being imitated. This volume, however, has a vocabulary, including notes; the vocabulary apparently contains only a selection of the words, the editor using his discretion in determining what is likely to be familiar to his readers. He has added some questions on the text, which are to be answered in German. There are also some grammatical questions, which are not likely to be of much service. Some are awkwardly worded, *e.g.*, "When has in German the imperfect subjunctive to be used in oblique oration?"

F. Kohlrausch, Das Jahr 1813. Edited by J. W. Cartmell. 156 pp. (Cambridge University Press.) 2*s.*—This work first appeared in the Pitt Press Series in 1875, when it was edited for the Syndics by Dr. W. Wagner. The new edition has an entirely fresh set of notes and four new maps; and the spelling has been modernised. In its present form it makes a good and interesting reader for a middle form.

Rudolf Baumbach, Waldnovellen. Edited by Dr. W. Bernhardi. ix. + 155 pp. (Heath.) 1*s.* 6*d.*—A somewhat gushing introduction by the editor is followed by a brief autobiography in German of the author. There are sixty-seven pages of text containing six short stories of varied interest, and twenty-eight pages of adequate notes. The vocabulary appears to be complete. It is a volume suitable for cursory reading in middle forms.

Lectures et Mélanges. By W. G. Hartog. viii. + 124 pp. (Rivingtons.) 2*s.* 6*d.*—This book can be commended. It contains a number of passages in prose and verse likely to interest children. Some of the pictures by Miss Mary Williams will attract them; but others are simply silly. To read "Le lion de Florence" is very well; but then to look at the picture opposite gives one a shock; and who ever conceived of Andersen's little match-seller sitting apparently on a hill surmounted by a meaningless lamp-post? The exercises at the end are good; the vocabulary is by no means complete.

Classics.

A Greek Grammar. Accidence. By Gustave Simonson. xiii. + 351 pp. (Swan Sonnenschein.) 6*s.* 6*d.*—Regarded as a storehouse of facts, this book, although not likely to supersede Jelf or one of the complete grammars, is good. Dr. Simonson has studied the best authorities, and his knowledge is not antiquated; thus the dual τὰ ταῖν has disappeared, and the inflexions given are those which are found. Typographically, too, it is good, the uncontracted or unimportant forms being less prominently printed than the normal Attic, and the device of grouping associated forms by enclosing lines being a distinct

help to the eye and mind. Inscriptions, however, are not so well printed; the symbol used for Γ with a short limb on p. iii. is Γ (γράμμα). The account of the dialects is much fuller and clearer than in most grammars (on p. 221 ὑπὰ seems to be a misprint for ὑπό). We may also commend the brief account of the alphabet, which we had fain seen longer. The one point where Dr. Simonson seems to be lacking is a knowledge of comparative philology, which, although it should not be obtruded in a special grammar, will yet lead to a better classification of the phonology—for instance, of the vowel-changes known as Ablaut. Such knowledge would also have suggested a grouping of the sounds by organ, more scientific than that adopted on p. 14, where the mutes are arranged thus —labials, palatals, linguals. We have examined the book with care, and noted a number of details in which improvement would be possible; but we think our readers will be content to know that it is a distinctly good book. We hope the author will study comparative syntax before he completes his second part.

The Alcestis of Euripides. Edited by A. T. Tate. xxix. + 136 pp. (Blackie's Illustrated Greek Series.) 2*s.*—The introduction of this book gives an account of the play and its characters, of the Attic theatre and the production of plays, the structure of Greek tragedy and the author. Mr. Tate, we observe, has made up his mind on one vexed question, and holds that "each dramatist, originally at least, contended with a trilogy or group of four plays"—a custom which was certainly not "original," and how far it was followed later is by no means clear. Some parts of the introduction are beyond beginners, whom Mr. Tate professes to have in view, but the information is useful and generally sound. The illustrations are good, especially those from vase paintings; but we ask for exact references in all such cases. A Roman statue of Apollo should not be given to illustrate a Greek play: the vases would supply plenty of contemporaneous pictures of the god. The notes, as usual, are too full; such explanations as those on verses 8, 9, 53, 263, 1153 (several times repeated), amongst many others, are best left to be solved by question. There is too much translation in the notes. An appendix contains a few good specimens of verse translation.

Greek Story and Song. By the Rev. A. J. Church. With fifteen illustrations after the antique. xv. + 362 pp. (Seeley.) 3*s.*—In this book Mr. Church has summed up the contents of many of his other books, with new additions. We have, for example, the story of Prometheus, retold from Aeschylus; that of Orestes, from Sophocles; the finding of Iphigenia, from Euripides; a brief story of Troy and the Return of Ulysses; the exploits of Heracles, the Labours being treated in short, and most space given to the rescue of Alcestis from Death; Theseus, from Pindar, Bacchylides, Euripides, and others. Besides these there are bright paraphrases of the "Plutus" of Aristophanes, the "Birds," the Ecclesiazusae," and the Adoniazusae of Theocritus; and finally, some verse translations from the "Anthology." The verse we like least; it is not very graceful, but correct enough. The other narratives are in Mr. Church's best vein, interesting from beginning to end, and told in a simple style which a child can understand. The humorous extracts are a very welcome addition. The illustrations are good; three are from Flaxman, the rest from ancient vases, reproduced in the brown and red of the originals. We can cordially recommend the book as a prize or a gift book for children.

The Theory of Education in Plato's Republic. By John E. Adamson. xii. + 258 pp. (Swan Sonnenschein.) 4*s.* 6*d.*—Mr. Adamson has made a valuable study of the well-known passages in the "Republic" dealing with education. He is not by any means the first to do this; but others, as Dr. J. Adam, have approached it rather from the scholar's point of view than that of the practical teacher. And Plato has something to teach the practical teacher, even beyond the high ideal which inspires him. No one has made more clear than Plato the necessity of distinguishing between the joy of work and the money profit which may come from it; and no one has seen more clearly the subjects proper for educating the very young. He also held that primary education was for all, the higher education only for those who were fitted by nature to rule. It is not sufficiently recognised to-day, we think, that there are numbers of children who are congenitally incapable of profiting by higher education, and that these are by no means confined to the humbler classes of society. Plato has his faults, as Mr. Adamson fully admits; his system was in some respects narrow, and implied too much of specialisation: yet his ideal of personal self-sacrifice for the common good is higher than that of the innumerable faddists of our day, anti-vaccinators, passive resisters, and so forth, who will concede nothing which does not commend itself to their often ill-informed minds. Plato's love of all things beautiful is another good point: where is music in our education? or the study of fine literature with the sole end to appreciate and to enjoy it? or the practice in rhythmical movement, and the feeding of the imagination on beautiful and ennobling stories? If we get any of these blessings it is by accident, and in despite of examinations which might be passed with distinction by deaf, dumb, and halt. It is impossible to deal with all the topics discussed by Mr. Adamson, or, indeed, to mention them; but we can recommend his book as stimulating.

Edited Books.

Washington Irving's Life of Oliver Goldsmith. By C. R. Gaston. xxix. + 374 pp. (Ginn.) 2*s.*—This biographical work of Irving's is not widely known, and the idea of making it a school text-book in literature is a good one; but we cannot say as much for the execution in this particular instance. The first words of the preface introduce us to an attitude of the editorial mind which betrays want of confidence and scholarship. "The introductory matter in this volume aims to induce in the average high-school pupil the right attitude with which to begin reading the biography. The annotation is thought to be not over elaborate nor too scant." And so on. The tone is unsatisfactory throughout, though it ought to be conceded that the introductory sketch of Irving's career is reasonably well done, and a chronological table of Oliver Goldsmith's life and the corresponding events of English and American literary history is excellent. To each chapter is appended a number of "Topics and Questions" on which the editor sets great store; but to many of these we are compelled to take exception: *e.g.* (1) Would sixty guineas in our day be considered good pay for a novel reaching three editions in a few months? (2) Is Johnson appropriately called the great Cham of Literature? (3) Why did not Goldsmith receive a pension from the Crown? If he had received one, should you think less highly of him? (4) Has Goldsmith's estimate of Voltaire's fame been justified? To this the editor appends the direction in brackets: "[Consult teacher of French.]" We think this method is quite inadmissible in a good edition of a genuine piece of literature. Many things in the notes are open to the same objection. One of these trivialities at least deserves to be noticed. (137-9.) "*Oratorio.* See dictionary and decide whether Goldsmith was well qualified to succeed in this kind of composition." Evidently the editor confounds the librettist with the composer. But enough; the volume is not equal to the deserts of its subject-matter.

(1) *Selections from Bacon's Essays.* By R. Oswald Platt. xix. + 55 pp. (Macmillan.) 6*d.* (2) *Aytoun's Lays.* By H. B. Cotterill. viii. + 60 pp. (Macmillan.) 6*d.*—Two booklets undertaken by scholarly editors with an eye to the needs of pupil teachers. The "Bacon" covers ground which is becoming educationally familiar. It is reasonably well done. "Aytoun's Lays" are not quite so familiar, happily; and the present edition is well done. The three ballads included in this compilation are treated each to an introduction and notes at the end of the volume. The introductions are full and clear; the notes are short but scholarly. Some exception, however, may surely be taken to the editorial idea that "How they toss their mighty branches" may be read as a line of three stresses.

Selections from Froissart's Chronicles. Edited by N. Frazer. 198 pp. (Horace Marshall.) 2*s.*—This volume, well printed and cleanly bound, is a pioneer in good English work; for it contains no notes. Perhaps the indignant protests in magazines and newspapers against over and foolish annotation is meeting with its reward. At any rate, here we have a well-chosen, moderately modernised and most interesting selection from Froissart. The illustrations, which might have been numerous, are few, and are not very good.

Shakespeare's Hamlet. By O. Smeaton. (Dent.) 1*s.* 6*d.*—The more we see of the volumes of this series the more they commend themselves to us. "Hamlet" suffers from the same defect as previous volumes in the matter of paging the text itself, but the six illustrations which illustrate it have some individuality and are decidedly impressive. As much cannot be said, unfortunately, for the coloured frontispiece. The notes and glossary are illustrated in the same way as in previous volumes, only the glossary has the lion's share of these quaint and interesting woodcuts. The inclusion of these illustrations add greatly to the educational value of the series. The notes, too, are excellent from a literary point of view, and the editor falls back on the Clarendon Press explanation of the celebrated "hawk from a handsaw" phrase. There is much interesting matter also in the introductory section, notably the editorial defence of the theory that Hamlet was not mad, and that it was Ophelia's weakness of character which drove him to extremities.

Scott's Kenilworth. By J. H. Flather. xxiii. + 560 pp. (Pitt Press.) 2*s.* 6*d.*—This is an admirable presentation in educational form of what is perhaps Scott's most fascinating novel. In order to make a school-book of it a few phrases have been omitted, but the bowdlerising process would almost pass unnoticed. The introduction is brief, and the inevitable account of Scott himself is almost too slight, but the sections dealing with the novel itself are exceptionally good. Notes are put at the foot of each page where required. These notes are brief, but well done and numerous. Scott's own notes follow in due course, and there is a good glossary and a plan of Kenilworth Castle, which is of great interest. Altogether this edition is worthy of high praise.

Select Essays of Bacon. By E. H. Blakeney. 52 pp. (Blackie.) 6*d.*—An addition to a well-known compendious series. Eight essays only are included, but the notes have been done by a careful hand, and this little booklet is serviceable.

Old Testament History for Schools. By Dr. T. C. Fry. 191 pp. (Edward Arnold.) 2*s.* 6*d.*—Dr. Fry has written a short but frank account of Hebrew history, with the aim of introducing it to school-boys and school-girls entirely from the critical position. He declares his own belief that that position is ut able. Such thorough-going candour may not please ev for the difficulty of getting some people to think about problems instead of believing too much, or believing as an alternative, is well known to everybody who has ex of the world; but we feel constrained to speak in ent terms both of it and of this book. The account Dr. F of the Hebrews is lucid, clearly expressed and int The fullest references are given to books of modern and scholarship; and some wholesome advice to tea read these books, and so to know more of the subj their classes, ought not to fail of its effect. The m tables are excellent.

History.

A First Book of British History. By T. F. Tout. 236 pp. (Longmans.) 2*s.* 6*d.*—Prof. Tout's name is a g for good work, and in this booklet we have the story islands told as fully and accurately as is possible w narrow limits allotted. There are eighty-five illu thirteen tables, and twenty-five maps and plans. C much is omitted, but the author has succeeded in his object of putting before young minds the ideas of c and growth which lie at the root of all history.

Mediaeval England. By Mary Bateson. xxvii. + (Fisher Unwin.) 5*s.*—So far as our knowledge of t called "The Story of the Nations" goes, this is far the best of the over sixty volumes. Miss Bateson is we as an original researcher into mediaeval municipal a life, and in this volume she gives us the result not on

Winchester Font.

own discoveries, but also the latest results of all work same field. The result is a wealth of material set for hand of a master. We can conceive no better boo teacher's library. It expands, as it were, to infinity th paragraphs on "social life" which disfigure the ordin book, and serves to destroy the calumnious effect of such Mark Twain's "Yankee at the Court of King Arthur." there is much humour and vivid presentation of the l ancestors. There are many excellent illustrations, one by the courtesy of the publishers we here reproduce,

only complaint is the lack of explanation of some of these. The author assumes a fair knowledge of the period covered (1066-1350), but by way of help there is an excellent chronological summary.

A History of the Middle Ages. By D. C. Munro. xii. + 242 pp. (Appleton.) 4*s.* net.—This is a very good history of Europe from the fifth to the fourteenth century. Besides the story, chapters are devoted to the Church, to Feudalism, to the Moslem World, Schools and Universities, and the life of Nobles and the People. There are many capital illustrations, short bibliographies, and an index.

Queen Victoria. By Sidney Lee. xxxv. + 632 pp. (Smith, Elder.) 6*s.*—Neither the subject nor the author of this book needs introduction from us. The editor of the "Dictionary of National Biography" here gives us a cheap edition of his life of our late sovereign, amended by the new lights thrown on the subject by Mr. Morley's "Life of Gladstone" and other books published recently. It suffices to add that there are two portraits of the Queen and three other illustrations, besides a full index. The book should be in every school library.

Science and Technology.

Electric-Lighting and Power Distribution. Vol. II. W. Perren Maycock. 673 pp. (Whittaker). 7*s.* 6*d.*—This is an elementary manual of electrical engineering suitable for students preparing for the preliminary and ordinary grade examinations of the City and Guilds of London Institute. The paragraphs required for the preliminary grade are marked by asterisks. Numerous questions of a suitable character are given at the end of each chapter, but it is unfortunate that answers are not given to the questions involving calculations. Students using the volume will find it desirable to have Vol. I. of the same text-book, and also the author's volume on "Electric wiring, fittings, switches and lamps," since numerous references to these are found in the text of the volume under review. The text includes separate chapters on direct-current dynamos, alternating currents, alternators, electricity meters, motors, secondary batteries, transformers, generating stations and systems of distribution. The book is copiously illustrated and will up-to-date, and will be welcome to all students of electrical engineering, especially to those who possess but a limited knowledge of mathematics.

Lessons in Physics. By L. D. Higgins. 372 pp. (Ginn.) 4*s.* 6*d.*—The author has endeavoured to supply an elementary survey of more than the whole range of physics condensed into a comparatively small volume. The separate chapters are devoted to matter, fluid pressure, motion and force, heat and energy, sound, light, electricity, and chemistry. In each chapter the author has described facts which are common to the pupil's daily experience in order to explain the various principles: thus, a short chapter on the properties of gases terminates with a few lines of description of a compressed-air locomotive, to an illustration of which a whole page is devoted. The earlier chapters are far more successful than those on electricity and on chemistry: thus, the whole range of electricity is condensed into about 80 pages, and yet space is found for a few paragraphs on alternators, motors, wireless telegraphy, and Röntgen rays. Some of the definitions are certainly open to criticism: for example, we are told that "potential is the condition of a body with regard to the degree of electrical energy within it," and that "a magnet is a body so acted upon electrically that it has the power to exert magnetic force." Again, after a few pages devoted to chemistry, the student is expected to understand that "a soap is an alkali salt of a fatty acid." It is unfortunate that so attractive a book should encourage the beginner to acquire so superficial a knowledge of great subjects. The illustrations are numerous and excellent.

Handbook of Nature Study. By D. Lange. xvi. + 329 pp. (The Macmillan Co.) 5*s.*—This book contains a large number of short lessons, designed to occupy about thirty minutes each, upon the common animals and plants of the United States. The subject matter is arranged according to seasons and life-communities, under such chapters as "Life in and near the Water in Summer," "The Woods in their Autumn Foliage," "The Prairie in late Summer," &c. Although each lesson is complete in itself, the unity of organic nature is clearly brought out. Ample instructions for practical observations, together with numerous hints on the best manner of presenting the information to the pupils, show that the author is a skilful and experienced teacher. As many of the animals and plants described are common in this country also, the book may be cordially recommended to British teachers, not only from its immediate practical value, but also because of the knowledge it will give them of other conditions and other methods.

Agriculture for Beginners. By C. W. Burkett, F. L. Stevens, and D. H. Hill. xii. + 267 pp. (Ginn.) 3*s.* 6*d.*—The authors of this little book are the Professors of Agriculture, Biology, and English respectively in the North Carolina College of Agriculture and Mechanic Arts; it is produced in Messrs. Ginn and Co.'s best style, with good paper, clear type, and a wealth of illustrations; and the result is one to which it is difficult to do justice without seeming to "protest too much." Beginning with the origin and physical characters of the soil, the book goes on to describe in simple and luminous language the elements of plant physiology, the characters and habits of common insects, the best methods of raising various farm crops, the principles underlying the care and breeding of domestic animals, and, finally, the methods of dairy farming. A glossary at the end gives, for the use of the young reader, popular definitions of the necessary technical terms. In every respect the book is a model of what an elementary science manual ought to be.

Mathematics.

A School Geometry. Parts I.-V. By H. S. Hall and F. H. Stevens. xii. + 340 + ix. pp. (Macmillan.) 4*s.* 6*d.*
A School Geometry. Part V. By H. S. Hall and F. H. Stevens. x. + 241-340 + iii. pp. (Macmillan.) 1*s.* 6*d.*—With the issue of Part V. the course of plane geometry is concluded, and the whole work now appears in a single volume. Notes on the first four parts have been given as they appeared. Part V. contains the substance of Euclid's sixth book together with additional theorems of the kind to which the later editions of Euclid have accustomed us. The treatment of proportion is based on the hypothesis of commensurable magnitudes, and this treatment will be welcomed by all teachers. At the same time we think it is a mistake to avoid all reference to incommensurability: a short discussion of the relation of the diagonal to the side of a square, or of the relation of the two segments of a line divided in medial section would present the notion of incommensurability in a simple form, and would prepare the pupil for a more thorough treatment of irrational quantities at a later stage. The definition of similar polygons (p. 258) would be clearer if the phrase "corresponding sides" were defined. The special ratios called trigonometrical are, we think rightly, defined and their most important properties proved; in fact, on pp. 264-267 all the essential trigonometrical theorems needed for the solution of triangles are very simply demonstrated.

This branch of trigonometry may well be annexed to the geometrical course. The selection and arrangement of the various theorems seem very satisfactory, and give an excellent introduction to the properties of similar figures and to that somewhat indefinite region of geometry that used to be known as "sequel to Euclid." Now that Euclid's division into books has been departed from, it is not easy to understand why the theorems on centres of similitude, inversion, &c., should be classed under the heading "Miscellaneous Theorems and Examples." This "School Geometry" is sure to have a cordial reception from teachers; adhering more closely to Euclidean lines than some of the recent books, it nevertheless fits itself admirably to all the more important demands of the reformers, and it is written with an appreciation of the difficulties of beginners that successful experience alone can give.

Elementary Plane Geometry, Inductive and Deductive. By Alfred Baker. 146 pp. (Ginn.) 2*s.*—It is stated in the preface that this book is not intended to be a substitute for the ordinary works on deductive geometry used in schools, but rather as an introduction to their study. The special feature is the importance attached to accuracy of construction. Among the instruments recommended are the bevel and parallel rulers, rather unnecessary additions, we think, to the pupil's outfit. The book includes the usual constructions, and, if used in the manner described by the author, will give a good introduction to the essential properties of plane geometry. Induction and deduction are not rigorously separated; at times we think it will not be quite clear to the beginner whether the theorem is established as an inference from the cases actually drawn or as a logical conclusion from previously established theorems. While we think the deductive element not nearly so effective as it might be made, even in a book for beginners, there is no doubt that in the hands of a good teacher the book will prove very serviceable for junior classes.

Five-Figure Tables of Mathematical Functions. By John Borthwick Dale. xv. + 92 pp. (Edward Arnold.) 3*s.* 6*d.* net.—The only satisfactory test of tables is to be gained by extended use of them; so far, however, as a fairly prolonged inspection, with numerous tests of particular figures, enables us to offer an opinion, we think that in respect both of accuracy and convenience these tables may be accepted with confidence. By the conjoint use of the tables of logarithms and antilogarithms numbers and their logarithms can be found to five figures, though the tables themselves do not occupy the space usually required for five-figure logarithms; we hardly agree, however, that this accuracy is obtained "with the expenditure of little more labour than is involved in consulting a four-figure table." One great advantage over nearly all other English collections, however, is in the tables included in the book. Thus, in addition to the usual tables of logs., antilogs., roots, &c., we find tables of exponential and hyperbolic functions (with natural logs.), elliptic functions, Gamma functions, zonal harmonics, Bessel functions, and the probability, exponential, cosine and sine integrals. In some points of detail we think there might be slight improvements that would facilitate the use of the book, but we would most heartily commend these tables. If university men would use tables more, the work in calculus would be much more interesting and profitable.

First Lessons in Observational Geometry. By Mrs. W. N. Shaw. ix. + 148 pp. (Longmans.) 2*s.*—For teachers who have been trained on Euclid and who wish to understand the method of introducing their pupils to the study of geometry from the experimental side these lessons may be cordially recommended as an excellent guide. It is a book for the teacher rather than the pupil. Naturally, the solid comes first, but the sphere precedes the cube and leads to properties of circle; after the treatment of the cube come the proper of rectilineal figures; finally, the question of the estima of areas and volumes is considered. The development of subject is interesting all through the book, though we think colloquial style not to be altogether suitable. Great emphasi rightly laid on models, but we fear that the apparatus suggest will make demands that many teachers will be unable to comp with; at the same time the teacher may be reminded that ma of these models can be constructed very cheaply by himself a his pupils.

Geometry on Modern Lines: for Elementary Students. E. Springfield Boulton. viii. + 126. (Methuen.) 2*s.*—T selection of propositions and the general arrangement of t little book are distinctly good: few really important theore are omitted and few trivial ones inserted. On the other ha the demonstrations do not seem to us to be so carefully carri out as they might be, nor are the definitions always satisfacto Part II., the counterpart of Euclid's second book, is, think, specially poor; why, for example, retain the awkw form of prop. 4, p. 47 (Euc. II., 7)? If Appendix B (exc perhaps pp. 125, 126) were cut out and the space thus gai were used to amplify the too curt demonstrations of seve theorems, a considerable improvement might be effected.

Miscellaneous.

The School Training and Early Employment of Lancash Children. By E. T. Compagnac and C. E. B. Russell. iv. 39 pp. (Eyre and Spottiswoode.) 3d.—A supplement to eighth volume of Special Reports on Educational Subjects, p lished from the Office of Special Inquiries and Reports of Board of Education. The essay is saddening reading, showi as it does that no connection apparently exists between the e cational training given at school and the requirements in factory and warehouse of these youthful operatives. We co mend the report to all members of education committees, it shows that a thorough revision of the aims of element education is necessary, and that a closer connection with an higher appreciation of the work of the schools on the p of employers of labour desirable. A particularly interest feature of the essay is the number of expressions of opinion b from employers of labour as to their view of the small valu the present form of elementary education given to childr and from youths themselves who have been trained in prim schools and find themselves handicapped by ignorance certain subjects, and inability to make use of many availa leisure-hour pursuits.

Public Schools and Public Opinion. By T. Pellatt. + 136 pp. (Longmans.) 2*s.* 6*d.* net.—This book is descri in a sub-title as an apology for certain methods in Eng higher education. The author states, "My object . . . to try to inspire those parents who send their boys to me w a belief in the soundness of the preparatory and public-sch system *as a whole*." Mr. Pellatt seems to believe that a scie of education is an impossibility. He is often quite angry w men he calls "dabblers in educational theory," because t persist in holding up German methods of education as patte to be copied. He speaks of a recent article by Sir Oli Lodge as "for the most part a stream of bitter invective," describes its manner as "truculent." He complains of the in which men of science write their own language, yet him uses "to elaborately organise" (p. 52), "to suddenly rai (p. 55). But with much that Mr. Pellatt has to say we are hearty agreement, and we commend his book, irritating tho it is in parts, to all who have urged by voice or pen the ref of public-school education.

Justice in Education. A Word for Peace. By Dr. W. Sanday. 32 pp. (Longmans.) 1*s.* net.—"The object of this pamphlet is to conciliate." But Dr. Sanday adds later, "I am no believer in that kind of shallow compromise where one side does not state more than half of its own case in the hope that the other side may do the same." We commend the essay to both parties in the unfortunate controversy over the Education Acts.

Education as Adjustment. By Prof. M. V. O'Shea. 307 pp. (Longmans.) 6*s.*—This extremely interesting volume is an attempt to discuss the meaning, aim, and general method of education in the light of contemporary thought. The writer would, perhaps, not claim that any startling propositions are laid down, and we find the importance of interest, the necessity for large and appropriate "apperception-masses," the value of child study, and of all the physical side of psychological study fully insisted on. Education as adjustment is no new way of looking at education: it is the non-academic view which has always been held by those who do rather than write in the educational world. But to English readers it will be something new (and to English teachers how welcome) to find such an authority maintaining that the teacher "should not be required to spend time in learning the classifications of mental faculties. . . . In my opinion, the teacher as such can have no interest in formal psychology." The book is divided into three parts, "The Present Status of Education as a Science," "The Meaning and Aim of Education," and "The Method of Attaining Adjustment." If we read the book rightly it is a plea, one more plea, for compelling teachers to make children think rather than know; it is one more attack on any system which turns out children "educated" by the gross.

Our Defective System of Training Teachers. By J. W. Adamson. 16 pp. (Ginn.) 3*d.*—A well-considered plea for the postponement of the professional training of the future teacher until his general education is more or less complete.

(1) *Who's Who*, 1904. xx.+1700 pp. (Black.) 7*s.* 6*d.* net. (2) *Who's Who Year-book.* ix.+112 pp. (Black.) 1*s.* net. (3) *The Englishwoman's Year-book*, 1904. Edited by Emily Janes. xxxvi. + 352 pp. (Black.) 2*s.* 6*d.* net.—Three very useful books of reference. As a biographical annual the first would be difficult to improve. All whose business leads them to require a knowledge of living eminent men and women possess a copy. The second contains material which formerly appeared in "Who's Who," and has been crowded out by the increasing number of biographies included. The lists of officials and institutions it contains are excellently arranged, easily consulted, and continually in demand. The third contains all the information likely to be required by an Englishwoman who engages in the useful work of the community, and the editor is to be congratulated upon the excellent corps of workers whose assistance has been secured.

The Public Schools Year-Book, 1904. 579 pp. Swan Sonnenschein.) 2*s.* 6*d.*—This trustworthy and valuable reference-book has again added to its attractiveness. The present issue contains additional appendices dealing with the engineering and musical professions. The year-book ought certainly to be in every schoolmaster's library. We know from experience its usefulness in providing information.

Dictionary of Contemporary Quotations (English). By Helena Swan. ii. + 608 pp. (Swan Sonnenschein.) 7*s.* 6*d.*—An exhaustive and conveniently arranged collection of quotations chiefly from poems written since 1850. Teachers of English in secondary and other schools will find the volume useful in many ways. A full author's index adds greatly to the value of the book.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Need of Co-operation between Humanists and Realists: A Rejoinder.

I FEEL honoured that my letter should have received so much attention and am, of course, duly chastened in spirit after reading the various comments thereon; still I notice with satisfaction that your correspondents now tread with a degree of caution unusual in days gone by and that my doxy after all is not altogether outside orthodoxy. That British teachers should quietly entertain the proposal to teach English and not scoff overmuch either at science or at manual training may be taken as a sign of imminent progress. Of late we have had Canon to right of us, Canon to left of us advocating the cultivation of our mother-tongue; such bombardment by big guns must produce an effect even on conferring headmasters "eminent for incapacity" and may lead them ere long to score some "real achievement" which will even "force" Mr. Page to esteem them as highly as he does their associated brethren.

Let me take this opportunity of insisting that English is of all subjects the one which most calls for the co-operation of humanists and realists. If boys and girls are to be taught to write English, they must be allowed to write about topics within their own experience; the conventional essay is not only, as a rule, a futile exercise but the direct incentive to the bombastic, subjectless twaddle which bulks so largely as literature at the present day; the world is waiting for readable, informing books about the world in all its varied aspects, written honestly, exactly and with abundant knowledge; we should be training our boys and girls to write such books. Dr. Warre and his colleagues on the Military Advisory Board are reported to have misled the War Office into the belief that English composition can be taught as a special subject and it is to be treated as such in the Army entrance examinations; the magnificent training which the writing of reports on experimental work affords will therefore be omitted in the case of lads intended for the Army, as there is no obligation put upon them to do experimental work in preparation for the examinations. It is to be hoped that the new Army Council will make short shrift of the scheme of the Advisory Board; Army officers are required to write reports about things and events, not vague thoughts: their training should be to such an end.

Many of us have urged that the art of reading should be learnt at school. Your correspondents, I think, might well have exercised the art somewhat more carefully. Mr. Simpson speaks of *my* reference to a great passage in Shakespeare "as a criticism which a mere humanist would have shrunk from perpetrating": so I thought and mildly suggested when I adopted it, unprotected by inverted commas, it is true, from Mr. Page's article; still I have no doubt that Mr. Simpson will agree that Mr. Page is not a mere humanist and that as a critic of headmasters and professors he may be allowed considerable liberty of style.

Mr. Page is an accomplished strategist and would read into my letter all sorts of conclusions which were neither drawn nor implied. I suffer, he says, from a prejudice common among scientific men. I cannot understand that a student of literature may possess sense. Sense is not an easy word to define, nor even to confine in meaning. I used it not alone but in association with proportion and spoke of lack of "sense of proportion"; of this we fairly may accuse literary men. Then

he asks me, before I "wholly condemn classical study," &c. I have never by any single word wholly condemned classical study—quite the contrary, in witness whereof let me quote a passage from my Belfast Address:—

"The fact is, Latin is a subject which appeals to the minority of scholars; the time of the majority is wasted in studying it. I would give to all an opportunity of proving their aptitude in Latin or Greek or at least some opportunity of appreciating the construction of these languages; but I am inclined to follow the proposal—made by high authority, I believe—that such studies should follow that of modern language rather than precede it. The true study of classical languages should be reserved for the University."

As to my hinting that when a classical master talks sense, the performance is extraordinary, I am not aware that I so ventured. Mr. Page must know that the admission, confession or statement he has made that "science is now an essential, perhaps the most essential, part of education," is most astounding and one which places him on a higher plane, altogether apart from his classical colleagues, no one of whom, I believe, has ever previously gone so far. To have gained so brilliant a convert is a great victory to our party. In using the word "forced," I had no desire to imply that he had been put on the rack or otherwise compelled to make an unwilling admission—but merely that the force of circumstances had led him to the conclusion. That he has been so led is proof of eminent sanity of judgment. But he is not yet fully possessed of the meaning of the term scientific—otherwise he could not have said in his recent address that "in scientific and literary training there is a natural tendency to vague discursiveness." What there may be in literary training I do not pretend to know; but it is an absolute abuse of the term scientific to say that there can be a natural tendency to vague discursiveness in scientific training. That there is much pseudo-science abroad I will not deny, especially in view of recent public utterances on radium.

Statistics are proverbially dangerous. The fact that 70 per cent. of candidates for the position of State Engineer in Germany are from the Gymnasia is no more proof of the particular value of classical training than is the fact that the majority of our Army candidates are from the so-called public schools. In Germany the classical old fogies still reign supreme; here their dethronement is imminent, if not accomplished. I am sure Mr. Page will allow that I can believe he possesses the sense to know this.

Those who "maintain the paramount importance of manual training" *do not* "rest their view on the supposition that it is more vital to cultivate the use of the fingers than the use of the brain." Such a statement would be pure and undiluted nonsense; the fingers are *part of the brain*. If Mr. Page will engage in serious experimental work he will soon discover that the German poet's dictum is more often true when reversed.

Prof. Edgar is evidently given to conundrum-making—I never could answer riddles. The Oxford dictionary may help him in understanding the meaning of the words he italicises. The only way of understanding how to master a subject incidentally is to do it; if "incidentally," when not engaged in professing education, he will devote himself to experimental work, he will probably gain the necessary knowledge. The Professor of Education must perforce, it would seem, be unpractical. Surely the man at the Bar is not always at the Bar, nor the clergyman always at Church; they have homes and hands and may like to use the latter in repairing damages in the former, if not in leisure occupations. I have been a good deal in the Courts and have had occasion to notice that some knowledge as to how hands may be used would at times have been of considerable use to advocates; and just think how useful the rural clergyman might be if he could take a turn as manual instructor in the village school. To class games as manual training is a distinctly original achievement.

Mr. Simpson must train his mind to think otherwise than in hour intervals before he can re-organise his syllabus. As to doing the work for him and producing a scheme for him—he will excuse me if I take a legal view of the situation and decline to act unless formally retained. Until teachers learn to make experiments themselves, there will be little progress; Mr. Simpson should at least try to swim without a belt.

HENRY E. ARMSTRONG.

The Place of Nature-Study in Schools.

As a student of educational problems I have been much interested in recent months in a movement intended to secure the introduction into our schools of what is called "nature-study." The advocates of this study—we are warned by them not to call it a subject—do not, so far as I have been able to discover, represent the men and women to whose labours recent improvements in educational methods are due, but rather persons with a great love for the country and for natural phenomena, regarded from the point of view of the amateur, who know little and care less about the work and objects of schoolmasters and schoolmistresses.

So far as I have been able to understand their demands, I am in sympathy with their wish that an earnest attempt should be made to incorporate in the school curriculum a provision to ensure that our children may learn to love Nature and her ways and be so equipped that they will leave school with an intelligent interest in the problems connected with animal and plant life. But I have noticed with some consternation and no little surprise that the enthusiasm of these "nature-study" advocates is leading them to show a disposition to interfere in matters of which they seem to me to have no knowledge, and in which their interference may do serious injury to British education.

At a recent conference of the School Nature-Study Union one of the papers read revealed this tendency in an aggravated form. A few short quotations will serve best to show what I mean: "Instead of the happy welcome we all at present wish on behalf of true Nature-study, what do we find is taught? Something of human invention called 'Physical Measurements,' and a kind of make-shift, false Nature-study is inveigled in, smothered in, whispered in, under this guise by way of apology." "As long as the just claims of Nature-study are unrecognised, as long as teachers find that they cannot place it on their time-tables and take it informally in lieu of other and more formal and expensive grant-gaining science work, and so long as attendances at walks, rambles, excursions, &c., are not allowed in the form they should be—many of us must put up with a sham, unreal Nature-study classed under the head of General Elementary Science."

The inference here is clear enough. If these and similar remarks—and unfortunately they could be multiplied easily—mean anything, they mean that it would be to the advantage of British education if the work which men of science have, after much travail, introduced into our elementary and secondary schools could be displaced in favour of Nature-study. Such a contention seems to me a pestilent heresy. The modern courses in physical measurements and in other subjects intended to inculcate an acquaintance with the scientific method are designed, above all, to teach accuracy, to engender logical thought, to develop initiative. That science is formal is one of the reasons that it is so highly valued; if science were not organised, if it did not demand strict accuracy and close reasoning, we could, perhaps, dispense with it.

Many of us consider Nature-study valuable, but we resent the extravagant claims of its advocates. The study, if intelligently

ied out, is admirable, but it is an accessory study. Its busi- is rather to educate men and women to use their leisure rs wisely; and to pretend that desultory rambles and casual ervations can take the place of serious, painstaking, duly co- inated study of accurate science is to show ignorance of the cts in view in the introduction of scientific instruction into ool work.

hose of us who have made earnest efforts to advance the ms of rational Nature-study may well pray to be saved from friends. SPENCER BUXTON.

Graphical Illustration of Problems in Fractions.

ET AB=AC=unit of length. Then the square ABDC is unit of area. Thus:

$$ABFE = \tfrac{1}{7} \times \text{unit of area},$$
$$\text{and } \therefore ABHG = \tfrac{3}{7} \times \text{unit of area}.$$
$$\text{Now } AGKL = \tfrac{1}{5} \times ABHG,$$
$$\text{and } \therefore AGMN = \tfrac{2}{5} \times ABHG.$$
$$\text{Thus } AGMN = \tfrac{2}{5} \times \tfrac{3}{7} \times \text{unit of area}.$$

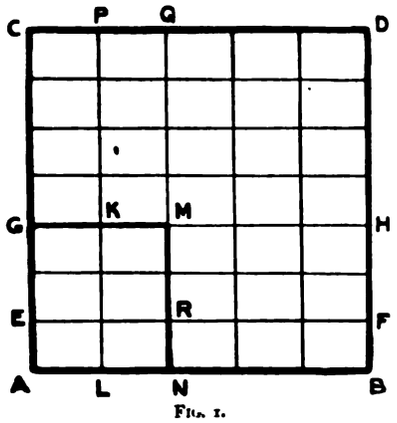

FIG. 1.

Again:

$$ACPL = \tfrac{1}{5} \times \text{unit of area},$$
$$\text{and } \therefore ACQN = \tfrac{2}{5} \times \text{unit of area}.$$
$$\text{But } AERN = \tfrac{1}{7} \times ACQN,$$
$$\text{and } \therefore AGMN = \tfrac{2}{7} \times ACQN.$$
$$\text{Thus } AGMN = \tfrac{2}{7} \times \tfrac{2}{5} \times \text{unit of area}.$$

In the unit of area we have 7 rows, each containing 5 of the all rectangles. Thus there are 7×5, or 35, of the small tangles, and thus each of the small rectangles is

$$\tfrac{1}{35} \times \text{unit of area}.$$

Now AGMN consists of three rows each containing two of small rectangles, and therefore contains 3×2, or 6, of the all rectangles. Thus

$$AGMN = \tfrac{6}{35} \times \text{unit of area}.$$

Thus $\frac{2}{5} \times \frac{3}{7} = \frac{2}{5} \times \frac{3}{5} = \frac{6}{35}$.

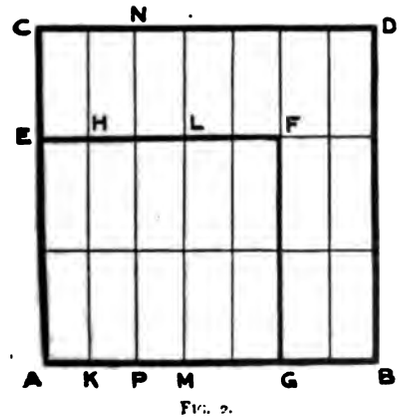

FIG. 2.

We have $AEHK = \frac{1}{5} \times AEFG$,

$$\text{And } \therefore AELM = \tfrac{3}{5} \times AEFG.$$

Thus $ACNP = AELM = \frac{3}{5} \times AEFG$.

But $ACNP = \frac{3}{7} \times$ unit of area,

i.e. $\frac{3}{5} \times AEFG = \frac{3}{7} \times$ unit of area,

and $\therefore AEFG = (\frac{3}{7} \times \text{unit of area}) \div \frac{3}{5}$.

Now the unit of area consists of three rows each containing seven of the small rectangles. Thus the unit of area contains 3×7, or 21, of the small rectangles. AEFG consists of two rows, each containing five of these small rectangles, and therefore contains 2×5, or 10, of the said rectangles. Thus:

$$AEFG = \tfrac{10}{21} \times \text{unit of area}.$$

Thus $(\frac{3}{7} \times \text{unit of area}) \div \frac{3}{5} = \frac{10}{21} \times$ unit of area,

Or $\frac{3}{7} \div \frac{3}{5} = \frac{10}{21}$. I. J. K.

The Teaching of Modern Languages.

WE have heard so much of late about the "Direct Method," or the "Reform Method," or the "New Method" of teaching modern languages; everyone who is interested in the subject has so come to look upon this method as *the* one which ought to be employed, and to take the view that it is superior to the old way as a matter of course, already beyond the reach of argument, that I venture to think it may prove instructive to pause and consider whether there is not, after all, a case for the other side.

When one tries, as I have tried, to explain what I have long considered to be the more enlightened methods to teachers of the old school who have never given them a moment's thought, or even dreamed that any other than those that have been in vogue for the last fifty years could be worthy the consideration of a man who is not a mere faddist, one realises, perhaps for the first time, that there *is* another side. From such conversations I gather that there are certain remarkably cogent reasons for continuing on the old lines, and with your permission, I will enumerate them as briefly as possible.

(1) The New Method involves a great deal more trouble and effort on the part of the teacher. Under old conditions, all he had to do was to set grammar to be learnt, and exercises to be written, hear the first from the book, and correct and return the second. In addition to this, a certain amount of translation into English from a set book, with the aid of a vocabulary, had to be got through.

(2) It is evident, too, that the good old method, briefly sketched above, made very little demand upon the teacher's knowledge. He could keep closely to the book, and, generally speaking, it was sufficient for him to be one lesson ahead of his pupils. Teachers' keys are, moreover, frequently procurable.

This was an immense advantage, as any member of the staff might be turned on to teach French. Headmasters naturally recognised the economy of this arrangement, and assistant-masters who possessed a smattering of a modern language could thus turn it to account as an additional qualification.

(3) The matter of pronunciation is another difficulty. Under old conditions pronunciation could be neglected. A sort of compromise in the form of anglicised French, the French of "Stratford atte Bowe"—was adopted and offered no difficulty to master or pupil. If the latter, after leaving school, had the good fortune to visit France, he would, of course, soon "pick up" the French accent.

The new method involves so much oral teaching, that really the varying systems of pronunciation resulting from the efforts of the different teachers in a school would be extremely confusing.

I feel convinced that I have not by any means exhausted all the arguments that might be brought forward, but perhaps I have said enough to show that such arguments exist.

Those I have mentioned may be summarised thus:—

The introduction of the new method of teaching modern languages would involve a sound knowledge of the language on the part of the teacher, and would thus deprive many worthy men, who have not that advantage, of participating in this branch of instruction.

It would greatly increase the labours of teaching, by substituting for a quiet, peaceful, mechanical routine, a system which must be studied as a science.

Lastly, it would render necessary the acquisition of a correct accent by the teacher, and would involve a knowledge of elementary phonetics. These are serious considerations!

S. A. RICHARDS.

"The Classical Review."

MR. WINBOLT'S statement on the first page of THE SCHOOL WORLD for February, that the *Classical Review* "appears but irregularly," may very well mislead the reader. Since its foundation seventeen years ago the *Classical Review* has maintained its scheme of publication intact. It appears every month, except during the summer holidays (August and September), the January and February numbers being published together in February. It thus appears more frequently and regularly than any other periodical—whether in Great Britain or America—which is devoted to the encouragement of classics.

Cambridge. J. P. POSTGATE.

I am very sorry indeed if I have misled any of your readers by what turns out to be a mistake of mine. It must be obvious from the general drift of my article that I had no wish to hurt the character of the *Classical Review*. I am very glad to find that that periodical is issued "more frequently and regularly than any other periodical—whether in Great Britain or America—which is devoted to the encouragement of classics."

Christ's Hospital. S. E. WINBOLT.

History in Irish Intermediate Schools.

ONE of the questions submitted (THE SCHOOL WORLD, January, 1904, p. 31) by the Intermediate Board of Education to representative Irish schoolmasters is: "Should definite text-books be prescribed in English History?" I, who am no Irishman, should feel inclined to reply:

(1) Why should *English* history be specially studied in Irish schools to the exclusion of *British* history?

(2) Can any text-book be found worth prescribing to the exclusion of others equally second-rate?

(3) Why not meet the real difficulty of the indefiniteness of the syllabus in respect of history by making out a fairly detailed synopsis of requirements suited to the several grades? Prof. Hearnshaw's article on "History in Public Examinations," in THE SCHOOL WORLD for last January, supplies an admirable principle of graduation.

(4) Why not encourage reading outside the text-books by prescribing for honour some real books. For instance in the 1904 syllabus.

(*a*) *Preparatory Grade* (to 1200). "The Celtic Wonder World," edited by Miss C. L. Thomson (or some similar book on the rich stories of Irish legends).

(*b*) *Junior Grade* (1200-1815, esp. Charles I.). Mr. G. J. Dickinson's "From King to King," or Boyle's "Selections from Clarendon" (special cheap edition).

(*c*) *Middle Grade* (1702-1714). Arbuthnot's "John Bull" or Steele's "The Crisis," in Mr. J. N. Figgis's volume, in Messrs. Black's "English History Illustrated from Original Sources."

(*d*) *Senior Grade* (Europe, 1789-1815). Burke's "Reflections on the French Revolution." J. S. LINDSEY.

MUTUAL AID.

THE object of this column is to afford teachers the nity of asking questions of and giving assistance to co The questions received to which replies are solicited printed first; following these will be the answers wh been sent in, and, to make such replies intelligible to all they will be accompanied by the question.

The questions should deal only with educational using the expression in a broad sense, and the public otherwise of any question must be left entirely to the d of the Editors.

Questions and answers should be addressed to the E THE SCHOOL WORLD, St. Martin's Street, London, W should be accompanied by the full name and addres sender, though not necessarily for publication. Each or answer should be on one side only of a separate paper.

QUESTIONS.

E. R. Some parents complain that the home lesso are not sufficiently long and difficult. Would any Higl teacher favour me with a schedule of "Home Less appropriate length and difficulty for girls of average inte (age 13-15) for two days? The subjects taken are history, geography, English, Latin and French to the Oxford Local standards.

[We will forward any schedule sent to us.—EDS.]

E. W. M. I wish to obtain a list of the average perfo of boys of various ages in school athletic sports. If such are obtainable, perhaps some reader could tell me where them. I shall be glad to receive any data—old sport school magazines, &c.—from which to work out such av

[We will forward any sent.—EDS.]

M. R. B. Can anyone name and give price and pub "Admission Registers for Private Schools" that have a space for recording details of admission, leaving, progr future work of pupils?

E. F. S. Can any reader inform me from what p following is a quotation:

"Oh! fret not after Knowledge,
I have none, and yet the evening listens."

QUESTION WITH ANSWERS.

F. B. *Which is the best text-book on Church Histo* 313 A.D. *to* 410 A.D. *for the use of pupils preparing Oxford Higher Local Examinations?*

A. J. EVANS. Carr's "Church and Roman Empir Gwatkin's "Arian Controversy," both in Lo "Epochs of Church History," 2*s.* 6*d.* each. Rob "History of the Christian Church," vol. i. (Murray).

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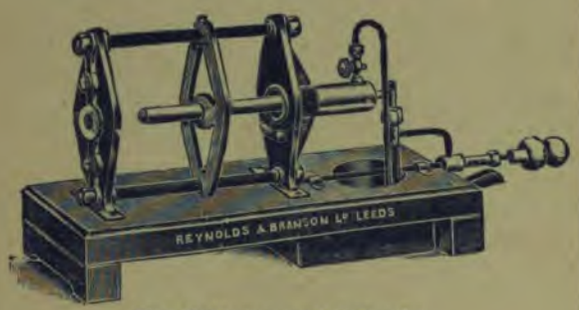

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To face Art matter.

The School World

A Monthly Magazine of Educational Work and Progress.

lo. 64. APRIL, 1904. SIXPENCE.

E INFLUENCE OF THE SCHOLARSHIP SYSTEM ON THE WORK OF PREPARATORY SCHOOLS.

By FRANK RITCHIE, M.A.

ary of the Association of Headmasters of Preparatory Schools.

HE average school-life of a boy belonging to the classes from which the public schools draw their material covers about eight , and the first half of this period (say from o 14) is usually passed at a preparatory ol.

is obviously necessary and desirable that the ods of education pursued at the preparatory it the public school should bear some relation ch other, and that each should form part of general scheme: the ground floor of the ing should, in fact, be in harmony with the structure, and *vice versa*.

an ideal world the general scheme for both es of school would perhaps be settled by a of educational experts; as a matter of fact, determined entirely by the builders of the structure, and the preparatory-school curri- n is dominated by that of the public schools. often said that the public-school curriculum like manner, dominated by the requirements e Universities; but the parallel is not quite t. Of the boys being educated at preparatory ols, at least 95 per cent. will pass into one or of the public schools, while the proportion of who go from the public schools belonging to the masters' Conference to the Universities is ably well under 30 per cent.

at the public-school curriculum should de- ne that of the preparatory school is not ising. The public schools are in most cases cient foundation; their curriculum, largely d on tradition and very slowly modified,[1] dy held the field when preparatory schools— te modern institution—first appeared on the and undertook the more elementary part of ork that had hitherto been done entirely at public school. Nor can the preparatory olmaster found any claim for commiseration he fact that his curriculum is practically settled for him. He has entered on this particular branch of the teaching profession with a full knowledge of the conditions and limitations attaching to it, and the offer which he makes to parents is not to give boys an ideal education, but to prepare them for entrance to a public school.

But, though he has no right to complain of the limitations which he has voluntarily taken upon himself, he has a right, and it is certainly his duty, to combine, so far as he can, what he conceives to be the ideal scheme of education with that which is settled for him, and to use such influence as he may possess to modify the established curriculum in what he believes to be the right direction.

The preparatory schoolmaster has a fair claim to a share in the discussion of the ideal curriculum. He is, or ought to be, something of an expert as regards the mental development of young boys, while in the majority of cases he has, as an assistant-master in one of the public schools, also had previous experience of older boys. Nor is this claim denied. The Headmasters' Conference has on several occasions during the last few years held consultations with the Association of Preparatory Schools; the representations of the latter body have been considered, and in some points, at all events, the requirements of the scholarship and entrance examinations of the public schools have been modified in accordance with those representations.

The general effect of the public-school entrance scholarship system is to emphasise and intensify the influence already exercised on the preparatory-school curriculum by the requirements of the ordinary entrance examination. The two examinations differ in degree rather than in kind, and the relation between them is much the same as that between the honour and the pass examinations at the Universities. The subjects required are the same in both, but the standard in the scholarship examination is, of course, very much higher. If, then, we are asked whether the influence of the scholarship system on preparatory schools is good or bad, the answer must to some extent depend on the answer to the broader question, "Is the public-school curriculum satisfactory?" With the discussion of this broader question we are here only incidentally concerned; but, assuming that the public-school curriculum is satisfactory, it may still be possible to point to some effects of the

[1] Avebury has recently recorded the fact that while he was at Eton ver did a sum or had a lesson in any modern language."

scholarship system which are undesirable. In the first place, the system undoubtedly encourages early specialisation. This is, in the opinion of some people and even of some schoolmasters, not necessarily an evil, but the majority of educational experts has pronounced emphatically against it. It must be allowed that the amount of this encouragement to specialisation varies in different cases; for the scholarship examinations at the various public schools are by no means all alike, though a glance at the papers would probably fail to reveal the difference. The papers set usually include Latin, Greek, mathematics, French, English, &c., and may give the impression that they are so framed as to encourage a good "all-round" education. But the papers do not show the proportion of marks assigned to each subject, and it is on this proportion that the influence of the examination really depends. If in any given scholarship examination a heavy preponderance of marks is given to any particular subject the fact is very soon discovered, and there is a direct and obvious temptation to the preparatory schoolmaster to neglect subjects that do not "pay" in favour of those that do.

The practice of the various schools varies in this respect. At Winchester, for instance, it is generally understood that the scholarships are assigned for good "all-round" work; at Rugby they are avowedly given for special excellence in classics, mathematics, or modern languages; as a general rule, classics largely predominate.

The effect of the scholarship system in thus encouraging early specialisation may be seen by considering the time-tables of some preparatory schools. In vol. vi. of the "Special Reports" issued by the Board of Education, pp. 46-48, three time-tables are given:

(1) That of a preparatory school competing for scholarships.

(2) That of a preparatory school not competing for scholarships.

(3) An average time-table compiled from 120 returns.

The total of working hours varies very little in the three tables, but we find that the time devoted to classics (excluding preparation) is in No. 1 sixteen hours, No. 2 nine hours, No. 3 twelve hours. It should here be explained that the number of preparatory schools that can be described as "not competing for scholarships" is probably not very large. Very few schools can afford to neglect the valuable advertisement given by success in a scholarship examination, and the majority of preparatory schoolmasters, when they find a boy to be possessed of special ability, will enter him for competition.

A comparison of these tables shows that the average preparatory school devotes twelve hours a week (exclusive of preparation, probably four hours more) to classics, while the "non-scholarship" school is content with nine hours.

For the purpose in hand it is immaterial whether classics are or are not the most fitting instrument for a young boy's education; we are here only concerned to show that the devotion of so large amount of time to this subject is largely due to scholarship system. If the preparatory sch consisted entirely of picked boys, all of scholars standard, this result would not be so objecti able, granting, of course, that early specialisat is not in itself an evil. But, in fact, there are a rule, in any given school only a small percent of boys of scholarship "form," yet the requ ments of this small percentage govern, or, at events, influence the time-table of the whole sch

In very large preparatory schools, and especi in those that have acquired a reputation for w ning scholarships, this effect is naturally not serious, as the scholarship boys may be sufficien numerous to be treated separately, but in school of average size (30 to 40) the scholars system has at least a tendency to impose on average boy a curriculum that is determined the requirements of a select few. An instanc this tendency is seen in the present position Greek in the preparatory-school curriculum. long ago as 1887 the Committee of the He masters' Conference recommended that the beg ning of Greek should be postponed to a later than that at which it was ordinarily begun. I the ordinary entrance examination the standard Greek is not very high, and in some cases subject is not absolutely compulsory; but, so lo as advanced Greek is set in scholarship exami tions, it is practically impossible to carry out recommendation made by the Headmasters' Co mittee.

The most serious objections to the scholarsh system are then: (1) That it encourages ea specialisation; (2) that it tends to impose on average boy a curriculum only suited for boys special ability.

Other objections that are sometimes made m be briefly noticed. It is sometimes said th scholarships encourage "cramming." The answ to this charge must depend on the meani assigned to the word. All work done with definite object of passing an examination is, one sense, "cramming"; and all examinatio (especially those that are competitive) offer so such encouragement. Where the more objectio able forms of "cramming" are possible, the fa lies mainly with the examiner, and, with regard entrance scholarship examinations, it may pointed out that they have at least been kept cle of the "set-book" system, which offers a dir encouragement to "cramming" in its very wo form. But if the devotion of extra attention subjects that pay, and the comparative neglect those that do not, constitute "cramming," it c hardly be denied that some encouragement to t process is given by entrance scholarship in co mon with all other competitive examinations.

Again, it is often urged that preparation f scholarship examinations may involve injury to th health of the candidates from "over-pressure." is possible that in isolated cases this may be tru but it is practically certain that such cases a extremely rare. There are two ample securiti

against the danger. In the first place, it is directly contrary to the interests of the preparatory schoolmaster to cause or permit any pressure likely to affect the health of his pupils; in the second, most practical schoolmasters will agree that the danger of any boy injuring himself by voluntary overstudy is an extremely remote one.

On the whole it may be said that, if some general agreement could be arrived at as to what is the desirable curriculum for boys of ten to fourteen intended for the public schools, if the relative importance of the various subjects were carefully determined, and if the marking of the papers in scholarship examinations were adjusted to the scale so determined, the main objections to the scholarship system, so far as it affects preparatory schools, would be removed.

The total abolition of the system is so unlikely that it is hardly worth while to discuss the probable effects of such a change. It may, however, be pointed out that the boys of special ability would probably be more widely distributed among the public schools instead of being concentrated, as now, in those public schools that can offer the most valuable money prizes. The public-school requirements would still dominate the preparatory-school curriculum, but the domination would be less oppressive. The preparatory schoolmaster would still be anxious that his best boys should take good places in the entrance examination, but the clever boy would be definitely entered for one school and would not, as is often the case now, be sent in for a series of "shots" at various scholarships. There would still be some kind of competition for the best places at each public school, but the competition would be limited to the boys actually destined for that school, and the preparatory schoolmaster, feeling assured that his clever boys would be certain of obtaining tolerably good places, might be able to devote a little more time to his general education.

SCHOLARSHIPS FROM ELEMENTARY SCHOOLS.

By Harry Coward.
President of the National Union of Teachers.

MANY subjects are exercising the public mind as a result of the passing of the Education Act, 1902, and whatever may be the direct advantages or disadvantages of this measure, it has succeeded in arousing public attention towards many phases of the education question to a much greater extent than heretofore. The many recent well-attended educational conferences afford evidence of this, and it may well be asked what is to be the practical outcome of the papers read, the addresses delivered and the discussions which have taken place. One subject, standing out perhaps as of pre-eminent importance and pressing urgently to be dealt with, is the need of perfecting and strengthening the bonds between our elementary schools and those immediately above them.

The duty has been laid on the new education authorities of co-ordinating all grades of education. In doing this there will be of necessity at the same time a setting up of a more definite line of demarcation between the different grades of schools—paradoxical though this statement may appear—so that the necessity for bridging over the gulf between the elementary school and the secondary school becomes greater than ever. The questions of curriculum, friendly relations between teachers and institutions, and other matters are involved, as well as a carefully thought-out scheme of scholarships enabling the promising pupils of the elementary school to pass on to the secondary school. On this last subject I am asked to express my views.

In many of the older towns there exist ancient foundations offering a considerable number of scholarships, exhibitions and bursaries, which, together with the more recent scholarships provided by the late technical instruction committees, supply these localities fairly well. Bristol may be quoted as a good example of this class of town, with its free scholarships, from various ancient endowments, to the Colston School (boys), Colston School (girls), Queen Elizabeth's Hospital, the Grammar School, the Cathedral Grammar School, the Merchant Venturers' Technical College, and the Redland Girls' High School, in addition to a considerable number of technical scholarships which may also be held at most of the above institutions. There are, however, many large towns, such as Derby, Portsmouth, Oldham, Gateshead, Burnley, Preston, Grimsby, Brighton and others, where the scholarship provision, over and above that of the technical instruction committee, is non-existent or is so small as to be scarcely worth mentioning; while in our rural districts there is almost an entire absence of scholarships. It seems almost necessary for the creation of some national means of supplying the deficiencies in those districts where it is impossible for the local provision to reach a proper standard. Dr. Macnamara, M.P., boldly recommends that there should be placed at the disposal of the Board of Education each year from the estimates a sum of money to supplement the scholarships granted by local authorities. He also advocates the establishment of a select committee of the House of Commons to consider the question of scholarships in connection with the operation of the Education Act, 1902. Experience teaches that more than one kind of scholarship is necessary. In some cases it is enough for the scholarship to cover the cost of fees and books, while in others it should be of sufficient value to provide the cost of maintenance as well.

The method of awarding the scholarships requires careful consideration if they are, first of all, to secure the most suitable boys and girls to profit by the education of the secondary school, and also to exercise a wholesome stimulation upon all the elementary schools within the district for which they are offered. The usual plan of awarding scholarships to our elementary schools is by an

examination, for which, under regulations laid down, the pupils of all the schools may offer themselves, and the scholarships are given on the result of this one examination. This method, undoubtedly, lends itself to the special coaching of selected boys for a few weeks preceding the examination *inside* the school, and also *outside* the school for those scholars whose parents can afford to pay for it, which tells well on the examination results for those particular scholars, and by these means scholarships are gained by some children who are not the most likely to profit by the educational opportunities afterwards afforded. Indeed, it is very doubtful whether the result of one examination for young children is ever a very accurate means of testing either their knowledge or their mental capacity. Under this system, too, the schools in the poorer districts seldom or never succeed in winning any of the scholarships, and so the good effect which the scholarship system ought to exert over such schools is not felt. How is this to be remedied? I would suggest that a certain proportion of all the available scholarships should be allocated to each school in proportion to the average attendance, and awarded as the managers and teachers should decide to the most promising pupils who satisfied the conditions as to age, &c., laid down in the scheme. By this means, industry, ability, conduct and general progress could all have their due weight assigned to them in awarding the scholarships, and the moral and stimulating influence would be felt inside every school. The idea is not new. The Birkin's Charity in Bristol is at present dispensed in this way, and the Nottingham School Board formerly made its scholarship awards on the same plan. If, however, the competitive examination method be retained for little children, *viva voce* questioning by those thoroughly conversant with their capabilities and practically versed in their methods of training should, undoubtedly, form a considerable part of the examination. In this connection the following comments of the Royal Commission on Secondary Education in 1895 are worthy of particular notice:—

> It will be found desirable in many places, for the purpose of establishing a proper connection and correlation between schools of different grades, to attach certain of these scholarships to particular schools, as is often done in the case of existing endowments. Where this attachment is made to a public elementary school, we think that the scholarship should be awarded, either by competitive examinations held at the school, or, where this is considered undesirable on account of the tender age of the children, or for other reasons, upon the joint recommendation of the headmaster and of the school board or school managers, to the scholars whose record of work is best for a series of school years or quarters, or by a combination of the two methods. Where scholarships are attached to a secondary school, they should, as a rule, be awarded by a competitive examination to be held at that school. Where scholarships are not attached to particular schools, they should, as a rule, be awarded by competitive examinations, to be held at prescribed times and at convenient centres, under the supervision of the local authority. *We desire, however, to add that,* with respect to competitive *examinations generally, we consider they* should be restricted, as far as possible, to scholars above the age of twelve, and that examination, if at all applied below that age, should be of a v simple character. Even where the scholarship examinatio held for children of a more advanced age, it should, we c sider, be restricted to a limited number of subjects, sho include a considerable amount of *viva voce* questioning, a should be directed principally to ascertain the general int ligence of the candidates, rather then the extent of their acquis knowledge.

At what age should the child from the eleme tary school be offered a scholarship to the seconda school?

At present the age varies from ten to fourtee and the question of the most profitable and edu tionally economical age to begin secondary sch work is attracting much attention. Undoubte the age should be low enough to allow the hol of the scholarship a sufficiently long time at t secondary school, and at the same time hi enough for the essential work of the element school to be thoroughly mastered and the chil ability to discover itself. Altogether, I am opinion that about twelve years of age will sati both these conditions in the embryo scholarshi holder. It is generally conceded by teachers secondary schools that nothing would be lost if t study of Latin were not begun before twelve, a if this became generally adopted the chief stur bling-block in the way of adaptation of the schol from the elementary school to the secondary scho work would be removed, though possibly the are other ways as well in which the curricula the two grades of schools could be made mo perfectly to fit each other to the gain of both.

The length of time for which scholarships shou be granted is at present by no means settled, i it varies from one year to four, or even six ye in a few cases. Sixteen seems to be a suitable a for many boys to begin the work of life, and d not strike one as being too young to leave secondary school. If the scholarship were grant as suggested at twelve, this would give four ye as the time it should be held. Senior scholarshi offered at sixteen for another three years wo carry on those who showed special aptitude further study to the door of the university a bring university scholarships within their reach.

It is worth noticing that the new conditio under which pupil-teachers are to be employ open up a new problem with regard to the schol ship question. It is laid down that pupil-teach may not be employed till the age of sixte previous to which they must have spent so years in a secondary school. So far so good; this will cut off the supply of teachers coming fr the children of the elementary schools, unl scholarships be provided for them at the second school. Some authorities are already consider the advisability of selecting boys and girls twelve years of age and offering them scholarsh at the secondary school, provided their pare bind themselves that these children shall becc pupil-teachers at sixteen. This, however, is o to the grave objection that twelve is too young the children who are to enjoy the advantage c

four years' course in a secondary school to have their calling in life definitely decided upon, inasmuch as their likings and capabilities in all probability will entirely change during these four years. It will be far better to increase the number of the junior scholarships as much as possible, using, if necessary, the prospect of the holders to become pupil-teachers at sixteen as an inducement to obtain the right kind of candidates to enter for them, and then leave the teaching profession to be recruited from among the scholars of the secondary school exactly in the same way as any other calling or profession. For a boy or girl to be labelled at twelve as a "pupil-teacher scholar" among other scholars would to some extent minimise the advantages which the raised entrance age to pupil-teachership is supposed to give. If the future emoluments, position and career of the teaching profession can be made to compare favourably with those of other professional callings, there need be but little doubt that the right kind of boy and girl from the secondary school at the age of sixteen will be attracted to become teachers. The authority in each locality must decide what additional scholarships will be necessary in consequence of these new pupil-teacher conditions.

Evening school scholarships should not be forgotten by the authority that wishes to raise the general standard of education. These might be offered to the pupils of the ordinary evening schools and should be of sufficient value to cover the cost of fees and books in two or three subjects at the technical college, the university college, the school of art, etc., according as the pupils' abilities and tastes direct.

I may, perhaps, sum up my observations in the following suggestions:—

(*a*) The provision of scholarships has become of increased importance to the elementary schools by the passing of the Education Act of 1902.

(*b*) A large increase of scholarships is necessary.

(*c*) Junior scholarships should be awarded at about twelve years of age for four years, and should be of two kinds, one providing cost of fees and books, the other covering maintenance as well.

(*d*) A certain proportion of junior scholarships might well be allocated to particular schools in proportion to the average attendance.

(*e*) Where examination is retained for the scholarships *viva voce* questioning should form a considerable part of the examination.

(*f*) To provide for possible pupil-teachers is another reason for largely increasing the number of scholarships from the elementary to the secondary school.

(*g*) Senior scholarships should be offered at 16 years of age.

(*h*) Scholarships should be provided for evening school scholars.

(*i*) National scholarships might be offered in districts ill supplied with other scholarships, though care must be taken not to check local effort.

ELEMENTARY SCHOLARS IN SECONDARY SCHOOLS.

By the Rev. J. R. Wynne-Edwards, M.A.
Headmaster of Leeds Grammar School.

IN a series of articles dealing with the general question of schclarships, I have been asked to consider it from the point of view of those boys who pass from the elementary to the secondary schools. Perhaps, of all scholarship holders, they are the most important, for they tap a great reservoir which would otherwise remain outside the pale of secondary education, the whole body of the population which cannot afford to pay fees of any sort; a body which, from its size alone, must contain a large proportion of the best brain power of the nation. To every one who believes in the efficacy of higher education as the greatest factor in the equipment for life, it will be evident that unless we give this great boon to these boys we shall be depriving the nation of a large part of its available strength, whether in competition with other natious or in living its own life as fully as possible.

Further, I propose to look at the question from two points of view, that of the boy himself, and that of the school which receives him; leaving the third, that of the elementary school from which he comes, to those who are more competent than myself to speak from actual experience.

It is impossible, in the discussion of this question, not to be faced at the outset with the difficulty of the age of transition from one type of school to the other, a difficulty which seems to land us on the horns of a dilemma. Either we keep to the method generally in vogue at the present time, whereby boys pass on about the age of twelve or thirteen, in which case they are old enough to present a great difficulty to the secondary schoolmaster who has to arrange a time-table to suit them, or we adopt the age which was suggested at the Joint Conference held at the City of London School this winter, which would be generally approved of by secondary schoolmasters, namely, ten years; but in this case we are met by the almost insuperable difficulty of deciding at that very early age whether the boy will justify his scholarship or not. We all know well how hard it is to say about a boy in our own schools, at the age of ten, whether he is likely to go far, or is only precocious and may join quite the ordinary rank and file at fifteen or even earlier. A change in the direction of lowering the age would work much better in the case of the successful boy, but we should have to be prepared for a greater percentage of failures, and even now they are fairly numerous.

Let us consider, then, the boy of twelve or thirteen who has entered a secondary school. He has won a scholarship which covers the school fee and leaves a certain margin for maintenance. (This is almost a necessity, at any rate after a year or so, in the case of the sons of working-class parents, as they cannot afford to forego altogether the wages they would bring home.) He is anxious to work

and to get on, but he finds himself in surroundings altogether different from those to which he is accustomed. There is little tendency among his fellows to look down upon him merely because he comes from an elementary school, but, in many ways, he does not quite understand their codes of conduct, and has to adapt himself to them; and here, at the very outset, the question of character comes in. If he is a weak-minded person he will probably move along the line of least resistance, associate entirely with boys placed like himself, and defeat one of the two main objects with which he was sent to the school, viz., to imbibe the wider instincts and the feeling of *esprit de corps* of our secondary schools, which, from the nature of things, especially the large classes and early leaving age, are difficult to cultivate in the elementary schools.

If, however, in addition to the amount of intellectual ability which enabled him to gain his scholarship, he possesses a real force of character, he will want to participate in the whole life of the school, and will find no difficulty in doing so. The British schoolboy can recognise real worth when he sees it, and is always ready to give it its due.

Now, if we are to get the boys who possess the force of character and adaptability which will enable them to suit themselves to their new surroundings (we do not want to take good artisans and turn them into bad clerks), some selection must be exercised apart from the scholarship examination. To some extent, a careful *viva-voce* examination would supply this; but the selection, which would take the form of a nomination, must be made by the man who knows the boy, *i.e.*, by the elementary schoolmaster.

At the end of two, or possibly three, years the first scholarship expires, and the boy has to stand for an extension scholarship, which is to carry him on to the time when he will enter the university. On the ground of expense, it is impossible to have these scholarships as numerous as the others, and so some boys will be left out in the cold. In one way this is good, as there will always be some comparative failures, *i.e.*, boys who turn out to be intellectually or by character unfit to profit by the full secondary course, although they were up to scholarship standard at thirteen. My experience is that such boys are more numerous in the working than in the more cultured classes. From the point of view of these particular boys, the scholarship has been a very doubtful blessing; they have not been long enough at the secondary school to have derived much benefit from it, while their sojourn there may have given them a distaste for the walks of life for which they are really fitted. Such boys often drift into the lowest branches of the Civil Service. There will probably be others who are better than these, but still not up to the university scholarship standard, who might well be encouraged to stay for another two years, and will do good service to the country in technical and other work.

There will remain a very fair percentage of boys who are intellectually capable of benefiting by the full secondary course and of winning scholarships at the universities, and here comes the headmaster's most anxious work of selection. He has to decide not only whether the boy is capable of winning scholarships and maintaining himself at the university, although this is no easy task, but whether he will make a man who, after his university life is over, will be able to play that part in life for which his intellectual abilities would fit him. Some men are turned out at twenty-two or twenty-three with university honours perhaps, whose character (or want of character) makes them unfit for higher callings, and they have to take their place as failures, too often as masters in small secondary schools at a salary less than they would have been earning as skilled mechanics. Let the headmaster beware of exploiting such boys to bring university honours to his school at the risk of their lifelong failure.

There remain the real successes who possess the brains and characters to succeed in whatever career they take up, and these should be a very good proportion of the whole. With regard to them his chief difficulty will be in persuading their parents that "the true utility is the long utility."

When we come to look at the question from the school's point of view, we find that there are initial teaching difficulties. The boy will come able to write and do straightforward arithmetic well, and probably with a grounding in algebra and geometry. (I might mention here the great trouble taken by many elementary teachers in training their promising boys out of school hours, although this incidentally accentuates the difficulty of selection, especially if it partakes of the nature of cram, for we really want to examine on *promise* and not on attainment.) He will also have a fair grounding in the elements of analysis and the simple *facts* of geography and history, but he will have very little originality or constructive power, and will not have learnt any French or Latin. The question arises, where is he to be placed? for we must remember that he is a very important person, none other than the embryo head of the school, perhaps. Of one thing I feel sure, and that is that we must give him a start that will enable him to take up later the line of reading for which he is best fitted. He must not be shelved in an extra-modern department, which will be the easiest way of disposing of him, as his mathematical is far in advance of his literary training, for he may, if we give him his chance, turn into a classical scholar who will make a name for himself in after life. He should straightway be put face to face with the difficulties of Latin, not only for this reason, but because it is just the mental grind he needs to get him out of the somewhat empirical state of mind in which he has been brought up. This means that we shall have a hard task before us, for his traditions are all against it, and his parents probably do not in the least appreciate its worth. Something can be done, by way of a start in the few months before he actually enters the school. If the elected scholars are given a line of work in Latin and French, their old masters will

probably be glad to see that they carry it out, and it will be made much more valuable if the boys can get a little help from self-denying members of the secondary staff. A small prize, offered at the entrance examination at the beginning of the following term, will stimulate the work. One may note in passing that the extra work given will amply repay itself in the additional smoothness of the next term's work.

Then, when the boy comes, it is quite essential that he should not be put into an elementary scholars' form, for this at once defeats our end by herding him with boys of his own type, instead of getting him at once into the general run of the school, but it will be a great advantage for the new scholars to be taken together for a few hours in the week, say at the times when the rest of their set are doing arithmetic. In this way I have found that sharp scholars will, at the end of one term, get to the top in French and Latin of a form of boys who have been doing Latin for three and French for four or five terms. Afterwards the progress will be rapid, and I have known boys get to the top—both in Latin and Greek—of the Upper Fourth Form in four, and of the Fifth Form in seven, terms from the time they entered the school in the Lower Third.

Another very important thing is the proportion which the elementary scholars bear to the whole numbers in the school. This should not be too great, not much more than ten per cent., I should say. Otherwise they will either form a faction, or the whole tone of the school will be lowered. This tendency will be increased from the other end, for parents of the better class will be chary of sending their boys to a school where they will be swamped by a great number of elementary schoolboys, and that *esprit de corps*, which is the most valuable asset of the grammar school, will be lost. The elementary schoolboys themselves will suffer most of all, for they will lose that indefinable polishing process which is just what they need to take advantage of the position which their intellectual abilities would enable them to take.

It is most essential, too, that they should be encouraged to take part in the school games, and it is not always easy to induce them to do so, as the parents often are prejudiced against games of all sorts. Every effort must be made to get them to join in them, and it is a good plan to let them have their games without paying any subscription. Games are good for all boys, but they are especially valuable to the pupil from the elementary school, for they will teach him, as nothing else can do, the lessons of fairness and public spirit.

In conclusion, I would say that these boys are worth any amount of trouble. The best of them form the very cream of the school, and, as I know from my own personal experience, they may attain to the very highest positions of trust and service in the country.

There is only one way to improve ourselves, and that is by some of us setting an example which the others may pick up and imitate till the new fashion spreads from east to west.—James.

THE METROPOLITAN PUPIL-TEACHER SCHOOLS.

By Arthur J. Arnold, B.A.

Sheffield Pupil-Teacher Centre, President of the Federation of Teachers in Pupil-Teacher Centres.

AMONG the problems confronting the new Education Authority for London there is probably none upon which greater diversity of opinion exists, or upon which more plans founded upon meagre knowledge of the conditions have been advanced, than that of the education of London primary teachers between the time of leaving the elementary school and that of entering a training college.

Let the problem first be stated. The London School Board last year appointed 1,100 new adult teachers, and would have appointed more had they been obtainable. The new London Education Committee will have to provide for voluntary as well as Board Schools. In the Manchester district, provision is being made for 300 new certificated teachers per annum; in Sheffield, it is estimated that above 150 will be required. Taking the population of these cities, and the number of teachers appointed in London last year, we shall probably be within the mark in naming 1,800 as the annual supply needed by London.[1]

It is proposed in the Pupil-Teacher Regulations, and the proposal has been widely accepted in the provinces, that children from elementary schools shall proceed to secondary schools at 12, remain four years, pass into the pupil-teacher centre at 16, and thence to the training college at 18. For the two wage-earning years 14-16, a retaining fee must be paid by Education Committees in the form of bursaries.

This, then, is the problem: (1) To find annually a large number of young people, who, at 12, are either in secondary schools or willing to be transferred thither, whose ultimate object is primary teaching. (2) To provide annually about 1,800 bursaries. (3) To find immediately about 1,800 vacant places in secondary schools: 3,600 before next year, 5,400 in 1906, and 7,200 in 1907.

Experience of thousands of cases has shown me that few parents decide what to do with their children at 12. Undoubtedly there are in London about 2,000 children per annum of this age desirous of continuing their education in a secondary or higher grade school for two years, when free education and £20 are the inducements; so much is certain from the numbers seeking junior County scholarships. Whether free education alone would be equally attractive is doubtful; and whether all the candidates for junior scholarships are desirable as pupil-teachers, or desirous of teaching, is more than doubtful. Still it is probable that the children can be found.

To provide annually 1,800 bursaries will also

[1] This number agrees closely with Mr. Sidney Webb's estimate that Training College accommodation for 500 primary teachers, beyond the present available supply, must be provided annually.

be easy. We are not concerned here with the amounts, but a few are given to show how the question is met in the provinces (in order of town populations):—

	Boys		Girls	
	Age 14-15	15-16	Age 14-15	15-16
	£	£	£	£
Manchester	15	20	10	15
Sheffield	10	10	10	10
Bradford	13	17½	12	16
Brighton	13	15	8	10
Grimsby	12	18	8	12

The third part of the problem will not prove so easy of solution. The full number stated, 7,200, would only be needed should the future teachers be caught at 12; but even if none come in until 14, provision has to be made for 3,600. To introduce a primary school child to secondary work at 14 is, as centre teachers know, a heartbreaking matter, so we can hardly set down the number of places at fewer than 6,000. The problem is complicated by the unequal numbers of boys and girls required. Roughly, the teaching life of men primary teachers is twice that of women, while about twice as many women as men are working in the London schools. Thus, of the annual 1,800, about 400 will be boys and 1,400 girls.

There are in London about 100 secondary schools, a few of them of the first grade, which need hardly be considered here; the majority thoroughly good schools, doing work of a sound kind; but in some the curriculum is little, if any, better than that of the upper classes of good elementary schools. Most of the second class are full, or nearly so; most of the third class have some room, but if all were filled, the majority of the first 1,800 aspirants would still be without school places. The position when the second, third, and fourth contingents are ready is enough to give pause to the most optimistic educational doctrinaire in London. A question of this magnitude can only be faced in one way. The interests of secondary schools, the interests of pupil-teacher schools, are straws which must be swept aside. The only valid interest is that of the people of London and the education of their children.

Fortunately, the L.C.C. is used to large problems, and its record of administrative success is an assurance that this question will be overcome on sound lines. All the existing institutions, in a remodelled form if necessary, must be used, for not otherwise can the thing be done. The pupil-teacher schools are most likely to need remodelling. Their original function has been performed. They appear to have aroused a great deal of opposition, mainly from those who know least about them. Doubtless some of their fundamental virtues are their surface defects. The earnestness of their work has been mistaken for cram, the faithful carrying-out of Government regulations for narrowness of aim. Their pupils are conspicuous in train and car because they talk "shop," while other boys of the same age discuss the sporting news, and other girls criticise their teachers. The stalking-horse *Segregation* is found very useful in these attacks, even by gentlemen whose sons are in the Royal Navy.

Of these schools there are twelve established by the London School Board, and a few under denominational management. They were mostly built for secondary schools; are convenient of access over the whole of the areas they serve; are as a rule in districts not well supplied with secondary schools; many are of modern type in buildings and equipment, and will compare favourably with other secondary schools. As to their general fitness, let an example serve. The school I have in mind has over three hundred students, is in a modern building, with central halls, laboratories, art rooms, gymnasium, and dining room. Its staff consists of ten full-time teachers with five or six visiting teachers. Of the former nine are graduates, some with high honours; all are trained, have considerable teaching experience, both primary and secondary, and are eligible for registration in column B. Pupils pass directly to the older Universities, as well as to London, Wales, and Victoria, and at the present moment at least thirty old students are studying at one or another of these. About thirty pupils matriculated at London directly from the school during the past year. The corporate life is strong, a large and flourishing old students' association proving its reality. Other pupil-teacher schools could be quoted with equally good credentials, better indeed in some respects. I have taken a particular case to give concreteness to the argument.

Several courses are open to the Education Authority in dealing with these places. It may decide to limit their work to the period of pupil-teachership, *i.e.*, between 16 and 18. It may frankly convert them into secondary schools receiving pupils from all sources at 12, and retaining them until 18. It may convert them into training colleges of subordinate rank, receiving pupils at 16, and retaining them until the "certificate" is obtained: that is, in the years after 18 those unable to obtain places in the London Day Training College or other institutions for training teachers would receive further instruction therein, the technical training being under the control of masters of method, who might or might not be attached to the centre staffs.

If the first or third plan be adopted, the shortage of accommodation will still have to be faced. The development of secondary education in London has been so strikingly successful that any limitation of the school places at present available for ordinary pupils is to be deplored, and the County Council should avail itself of the accommodation of the centres, converted into secondary schools as far as it will go. Judged by the ordinar—

(*Continued on p.* 134.)

APPENDIX A.—*Scheme of Co-ordination: Primary Teachers.*

School.	Age.	To Admit or Retain.	To Transfer.
Secondary, providing Pupil Teacher instruction.	At 12	Junior County Scholars: (*a*) own pupils. (*b*) from Private Schools. (*c*) from Primary ,,	———
	At 14	Intermediate County Scholars: (*a*) own pupils. (*b*) from Private Schools. (*c*) ,, Higher Elementary Schools.	———
		Bursars * : (*a*) own pupils. (*b*) from Private Schools.	———
	At 16	Pupil Teachers: (*a*) own pupils. (*b*) from Secondary Schools not providing Pupil Teacher instruction.	———
		Student Teachers (for Secondary Schools): own pupils.	———
	At 18	———	Student Teachers to University. King's Scholars to Training Colleges.
Private Schools.	At 12	———	Junior County Scholars to Secondary Schools.
	At 14	———	Intermediate County Scholars to Secondary Schools. Bursars to Secondary Schools.
	At 16	Student Teachers (for Secondary Schools): own pupils.	———
	At 18	———	Student Teachers to University.
Higher Elementary Schools.	At 12	Junior County Scholars: (*a*) own pupils. (*b*) from Primary Schools.	———
	At 14	———	Bursars: (*a*) to Secondary Schools providing Pupil Teacher instruction. (*b*) to Pupil Teacher Schools.
Pupil Teacher Schools.	At 12	Miscellaneous pupils.	———
	At 14	Bursars: (*a*) own pupils. (*b*) from Higher Elementary Schools. (*c*) from Primary Schools.	———
	At 16	Pupil Teachers: (*a*) own pupils. (*b*) from Secondary Schools not providing Pupil Teacher instruction.	———
	At 18	Training Classes: (*a*) own pupils. (*b*) from other Pupil Teacher Schools.	King's Scholars to Training Colleges.

APPENDIX B.—*Typical cases of Co-ordination.*

(*a*) **Boy,** Secondary School. At 12, Junior Scholar. At 14, Bursar. At 16, joins Pupil Teacher Centre of School. At 18, enters London Training College.

(*b*) **Girl,** Primary School. At 12, Junior Scholar to Higher Elementary School. At 14, Bursar to Pupil Teacher School. At 16, Pupil Teacher. At 18, Training College.

Girl, Primary School till 14. At 14, Bursar to Pupil Teacher School. Thence as (*b*).

(*c*) **Boy,** Primary School. At 12, Junior Scholar to Secondary School. At 14, Intermediate Scholar. Remains at Secondary School till 18, thence direct to Training College.

(*e*) Girl, Private School. At 12, enters Pupil Teacher School. At 14, Bursar. At 16, Pupil Teacher, thence to Training College.

(*f*) Boy, Higher Elementary School. Sits for Civil Service, fails, at 15 accepts one year bursary at Pupil Teacher School. At 16, Pupil Teacher, At 18, Training College.

(*g*) Girl, High School, not providing Pupil Teacher instruction. At 14, Bursar at own school. At 16, Pupil Teacher to Secondary School providing Pupil Teacher instruction, thence as (*a*).

* The term "bursar," familiar in Scotland for hundreds of years, deserves to be acclimatised in England. It is short, matches "scholar," and conveys the sense intended, of instruction + maintenance.

standards of staff, premises and equipment, the "centres" would appear fit places to take rank with other secondary schools. They should be remodelled in such a way as to secure as much as possible of the work they have been doing, and to interfere as little as possible with the proper function of the existing schools. We shall, probably, all admit that it would be folly to send any child during the six years, 12-18, into three schools. During this critical period at least four years should be spent in the same institution; whether 12-16, as appears to be favoured in England, or 14-18 as in America, need not be discussed. In the accompanying scheme this principle has been regarded as axiomatic.

The future teacher has, wherever taught, received before 12 an elementary education. At 12, if in a secondary-school, he would remain there. If in a private or primary school, he would be transferred to a secondary school (of ordinary type or a remodelled centre) or higher elementary school. At 14, he would obtain a bursary. If already in a secondary school, he would remain. If in a higher-grade or primary school, he would pass into the pupil-teacher centre. In any case he would be a full-time scholar until 16.

At 16 the holder of a bursary becomes a pupil-teacher. If in a secondary school desiring to instruct pupil-teachers, he would remain. If in a school not so desiring, he would be transferred to the former. If in a pupil-teacher school, he would remain there until proceeding to the training college. Of those in secondary schools, some might prefer to become secondary teachers, and would then continue their work with a view to graduation, passing directly to the university, and finishing with a year of specialised study in education.

All who are to become primary teachers should, as far as accommodation serves, enter a training college, while for those unable to obtain admission training classes should be established at selected pupil-teacher schools.

There are difficulties confronting secondary schools providing pupil-teacher instruction. If the numbers remaining after 16 are small, pupil-teachers will preponderate in the upper part of the school. Not only would the evil of segregation be introduced, but the tone of the school would be derived from the "segregate," unless the unusual phenomenon of a lower and smaller form setting the pace were seen. The trouble of working a full-time curriculum side by side with a part-time course would be considerable; but doubtless this could be overcome, especially if the whole of the pupil-teacher instruction were done at one time of the year, the school practice at another. This plan has many adherents, even among centre teachers.

The question of caste will be a thorny one in these same schools. Where the upper school is large enough to leave the pupil-teachers in a minority, the tradition of the school will not suffer, but it may be otherwise where the centre dominates. Looking at the matter all round, none but *large schools* should have pupil-teacher centres *attached to them.*

If too much attention be paid to the acade work, the whole aim of pupil-teachership will frustrated. The best pupil-teachers will see l easy are the avenues into employment m lucrative than primary teaching, and will use free education provided in order to qualify other callings. Many of them have found the out already. How much greater will the exo be when they have the run of the best second schools, and get to know what fruits are me waiting to be plucked.

Although a provincial centre-teacher, I h discussed the London pupil-teacher question rat as a Londoner, proud to see, though from a tance, the wonderful progress London's educat is making. The London centre-teachers are f of all anxious for the well-being of London edu tion, and they feel that the specialised experie of many years should be utilised in the futu Their work has hitherto been done at high p sure, with limited time, upon lines narrowly defi by departmental codes, and they are anxious have an opportunity of imparting to it gre breadth while working with the same intensity in the past.

PUBLIC SCHOOL ENTRANCE SCHOLARSHIPS.

By the Rev. R. S. de Courcy Laffan, M.A.
Formerly Principal of Cheltenham College.

In considering the question of entrance schc ships from the point of view of the pu school, the first question to be determine that of the object actually aimed at by the sys of scholarship competitions.

Now it can hardly be disputed that, as a ma of fact, the majority at least of schools c scholarships with a view to catch the clevere more advanced boys of the age of 14 or th abouts, in order that, after a training of from th to five years, they may win successes in pu examinations or in the competition for Univer scholarships, and by so doing may maintain increase the reputation of the school, and then induce that great body of parents who estim schools chiefly by their list of successes, to e their boys. Ultimately the scholarship system, a present organised, has for its final cause the ke ing up of the numbers of the school; and t under our existing system of universal com tition, can only be done by the glamour of s "successes" as lend themselves easily to exhibit in a tabular form.

The object of the scholarship system is, course, to select the most desirable boys. I given these circumstances, the "desirable" means the boy who is most likely, when his t comes, to achieve the distinction desired. T being so, the subjects set for scholarship exami tions will necessarily be those which best test likelihood of success; and the preparatory sch

will be encouraged to specialise with a view to produce boys who shall exhibit the qualities which make that success probable.

All this is inevitable if the competition of schools for pupils is a necessary condition of the organisation of education. From this point of view, then, there is little fault to be found with the scholarship examination in the majority of our public schools. On the classical side boys of 14 or thereabouts are required to be able to make out the meaning of passages of moderate difficulty in Latin and Greek prose and verse, and to render them into intelligible and idiomatic English, to have an accurate and even minute knowledge of the elements of Latin and Greek grammar, and to be able to compose with some skill in Latin verse and prose. On the mathematical or modern side, the place of the classics is taken, on one hand, by arithmetic, algebra, Euclid, and trigonometry, and on the other by one or more modern languages, the examination in which includes prose composition, the making out of fairly hard pieces of unseen translation, and questions in grammar. A slight recognition of the value of a wider training is given by the demand that candidates for classical scholarships shall show some acquaintance with elementary mathematics, and mathematical candidates with elementary Latin. An English essay, sometimes confined to the classical side, is given as a test of original thought and the power of literary expression, and a general paper covering a wide range of information in literature, history, natural history, and geography, with some questions on current events, is usually set in common to the whole body of candidates.

In spite of these πάρεργα, it is obvious that the essential object aimed at is to secure a classical scholar so drilled in the accidence of the Greek and Latin languages, and so far advanced in translation and composition, that by concentrating his attention during his school life almost entirely on Latin and Greek, he may be fairly sure of ultimately winning a University scholarship in classics, or to secure a mathematical scholar so thoroughly grounded in the elements of mathematics that by a similar concentration he will develop into a mathematical scholar of the University, or, with the addition of training in modern languages and science, into the winner of a high place in the Woolwich examination.

The examinations for entrance scholarships are, on the whole, well calculated to secure this result. But is the principle of selection one to be desired from the point of view of the total development of the boy himself?

Admitting, to take one case only, that a sound classical training is, for those who are able to receive it, the most perfect form of education, it cannot be regarded as otherwise than deplorable that a boy's mind should be so early concentrated in the study of the classics on what "will pay" in examination. Yet what other effect is likely to be produced on children of 14, who, during the whole of their preparatory school life, have had their gaze steadily directed towards an examination success, and spend the last few months of their preparatory training in going about from public school to public school, hunting for a scholarship. Such boys will be either prematurely exhausted, like the youngster who, having won a public-school scholarship, and being asked, "What are you doing now?" replied with indignation, "Doing? I'm not doing anything, I've done!" Or, on the other hand, they will have acquired the habit of attaching inordinate importance to the minutiæ of classical sholarship, a knowledge of which, in the case of boys of 14, can be most easily tested by examination, to the detriment of their appreciation and enjoyment of the classics as literature, which do not so readily allow themselves to be estimated in marks. The tendency of the training on the classical side of most public schools is to emphasise unduly the grammatical and philological technicalities which still play a large, though happily a diminishing, part in the examination for University scholarships. All the more reason is there why boys should come to the public school with interest in the human side of classical study at least awakened.

Matthew Arnold wrote long since of our schoolboys: "The elaborate philological groundwork which we require them to lay is in theory an admirable preparation for appreciating the Greek and Latin authors worthily. The more thoroughly we lay the groundwork the better we shall be able, it may be said, to enjoy the authors. True, if time were not so short, and schoolboys' wits not so soon tired and their power of attention exhausted; only, as it is, the elaborate philological preparation goes on, but the authors are little known and less enjoyed."

The witness is true, even to-day. Of how many even of those who win University scholarships does it hold good!

In days when the classics formed practically the only vehicle of mental culture, when the classical curriculum was used not only to develop taste and feeling, and power of thought and expression, to give insight into life and to impart acquaintance with its records in the past, but formed also the only means of cultivating observation, accuracy, memory, this stress on the minutiæ was natural and inevitable. To-day, when the latter qualities can be more effectively developed by scientific and manual training, there is surely no reason for sacrificing the primary ends of classical study to objects which, however important, are important only as means to that end.

If the present system of scholarship examinations must needs continue, one would fain plead for a much larger proportion of *viva voce* examination; for it is by *viva voce* examination that the subtler and more important qualities of a scholarly mind can most effectively be judged.

But there is, after all, reason to hope that the scholarship system, as at present worked, may not remain a permanent feature of our educational organisation. The Education Acts of 1902 and 1903, by bringing education in all its branches within the cognisance of local authorities, have set on foot a move-

ment the effects of which, if slow, will certainly be far-reaching. The first result will be that the finances of the local secondary schools will be placed upon a sound basis, that in each area different types of secondary school will be developed, and that the schools themselves will be kept permanently full by a copious stream of able boys flowing from the elementary school. The second result will be that these schools, requiring their whole energy to deal with their increasing numbers, will find it increasingly necessary to pass on their ablest boys in turn to the schools which are able to give the highest grade of secondary education.

This process has been at work for some years in London, where, to take one instance among many, it has been the policy of Parmiter's school—a second-grade school of admirable efficiency—to pass on its most brilliant pupils, after careful grounding, to secondary schools of the first grade, such as the City of London School or Christ's Hospital, with the result that in six years four old Parmiterians have gained open scholarships at Oxford or Cambridge, including a Trinity Major Scholarship in Mathematics.

This process, with which London is already familiar, will in time spread over the whole country. The local authorities, following the example of the Technical Education Board of the London County Council, will, by means of their own scholarships, send on the best boys of the local secondary school, whether as boarders or as day-boys, to the great public schools, which will thus be kept abundantly supplied with pupils. Concurrently with this, the system of inspection, whether by the Universities or by the Board of Education, as it spreads to the whole of the public schools, will furnish parents with a criterion of efficiency far more trustworthy than any that can be derived from comparative tables of examination or other successes.

By these means the system of competition for pupils between school and school by means of entrance scholarships will be, if not altogether abolished, yet reduced within very narrow limits, and it will be possible to bring back the scholarship system to its original and proper function, viz., that of providing for the able children of poorer parents, who otherwise could not afford it, the advantage of a public-school education. When the ultimate examination success of the scholar has thus ceased to be the predominant factor in his selection, room will have been made for the conviction that the ideal pupil of a public school is one whose preparation has been a broad and harmonious development of all his powers. There will be required of the candidate for a scholarship, not a specialised dexterity in some branch or branches of study, but evidence of a training which, while it fits him for specialisation hereafter, will guard him against the limitations and the narrowness of the specialist. The public school of the future will, I imagine, demand of its scholars that their faculty of observation shall have been developed by some elementary scientific work in which more emphasis is laid on methods of investigation than on the storing up c a catalogue of ascertained results, that their powe of accuracy shall have been trained on one han by drawing, and on the other by elementa mathematics, that their memory shall have bee strengthened by committing to it some of th masterpieces of their own tongue, and therefor necessarily also that they shall have some living and first-hand knowledge of the literature of that tongue and of that of at least one modern language. Above all, they will be required to exhibit indications of an alert mind and an intellectual interest in the subjects of their study. If they are to become classical scholars, there will perhaps be required in addition an acquaintance with the broad outlines of Greek and Latin grammar, studied in close connection with the easier portion of their literature, and some facility in prose composition. But there will be no demand for a memory prematurely loaded with exceptional forms or for a knowledge of anything but the commones constructions of syntax. The portions of the accidence which treat of exceptions, the rarer constructions and the beginnings of verse composition will be left for the years of public-school life. It may even be found that the study of Latin and Greek as a whole may safely and fruitfully b postponed till after the scholar has entered th public school, if he is thereby enabled to brin with him a mind trained by the study of moder languages to a rapid mastery of linguistic difficulties.

If we add the requirement of high character an earnest purpose, qualities difficult but not impos sible to ascertain, our scholars would form—in more than they do at present—a leaven of in estimable value in the working of public-schoo life, and their influence would tend, without an diminution of the healthy instinct for physica activity, to redress the balance of schoolbo opinion in favour of intellectual as contrasted wit athletic achievements.

I do not, of course, forget that our preparatory schools as a whole are admirable nurseries o character, and in many cases keep an influenc over their boys long after they have passed int the public school which no headmaster can recall without profound gratitude. I am aware also that in many preparatory schools a system such as I have sketched has been worked out with th happiest results. But this has been done not by reason but in spite of the presence of the scholarship competitions, which tend to drive the pre paratory school against its will in the direction o premature specialisation.

To the preparatory schoolmaster such a chang in the scholarship system would come as an in estimable boon, and the vast majority of publi schoolmasters would hail with delight the freedom which it would give them to concentrate thei energies on the primary object of education, th development of the mind and character of th individual boy.

Our public schools, however much some writer may decry them, have in the past achieved, in th

of character, results which have made
e admiration of the world. They have
ewhat less successful in the other essen-
t of education, the giving to each of their
conception, true and complete in its broad
of the meaning of life and what it requires
of the order of the world, and of their
e and function in it. If the changes which
ng over English education, while pre-
he supremely important character-forming
s of our English public schools, can so
nasters from the tyranny of examinations
y are able to devote themselves with
d energy to the full harmonious mental
ient of their pupils and to their adequate
it for the battle of life, the leaders of the
of to-morrow will come to their task
ly equipped than their predecessors of
r the responsibilities of leadership, and
be able to face without fear or misgiving
ult tasks which still lie before us in the
organisation of our national and imperial

HE SCHOLARSHIP SYSTEM.

By T. Gregory Foster, B.A., Ph.D.
Secretary of University College, London.

MINATIONS have harmfully dominated
e scholarship system. By thus adapting
ord Curzon's excellent summary of the
of Indian education, I can express my
efly on the scholarship question. Just as,
al, education has been hindered and ham-
y the examination system, so have the
s for which scholarships are usually given
ewise hindered and hampered by the
tion system.

urposes of giving scholarships are, gene-
aking, twofold.

) promote some form of education either
or special.

) enable those who would not otherwise
position to continue their education to

e present time the giving of scholarships
ither of these purposes satisfactorily. It
does not promote education, but in almost
s promotes "cramming." In order to
"cramming," the examination syllabus
p by an outside body and the examination
prepared by outside examiners must be
d.

new public education authorities might
ll adopt some such system as the follow-
awarding their scholarships, which, if care-
orked, would get over the difficulties that
nt exist.

larship examinations should be directly
ted with the work done in their regular
course by the candidates and should be
cted by those who have taught them,
ly with the assistance of outsiders as
ors; but even then the award of a scholar-
ship should not be made to depend entirely on the examination. It should depend in large measure upon the school record. It is clear that scholarships can only be awarded on this principle when the authorities who have to award the scholarships are satisfied that the schools in which they are awarded are efficient. This will necessitate school inspection. All schools that come satisfactorily out of the inspection should be placed on a list containing the names of those schools that are judged efficient, and are therefore permitted to nominate their pupils for scholarships on the basis of their school work. Candidates who do not possess such a nomination should not be admitted. The relative merits of the candidates thus admitted would be determined by the examinations at the various schools. The assessors would be able to compare the standards of the different schools, and would determine the final order of merit.

ART INSTRUCTION IN SCHOOLS.[1]

By Archibald H. Christie.
Inspector of Art Schools and Classes L.C.C. Technical Education Board.

III.—Materials.

A GREAT variety of interest is placed before those pupils going through such a preparatory course as that traced out in the preceding articles. From their studies of still life, flowers and the like, they acquire some power of noticing the changing appearance of objects under different conditions of light and position, and grasp the necessity of always closely observing these circumstances.

They learn to express in pencil and colour the effects they desire to obtain with a certain amount of accuracy. Habits of analysing the structure of designs, and of exactitude in handling tools, result from their heraldry, lettering, and pattern-work exercise; faculties that will both act upon and derive benefit from the woodwork, needlework, and geometry classes. A judiciously selected series of copies placing before them the handiwork of some masters of branches of art closely allied to their most familiar early exercises brings them into touch with real work that can be named and dated, supplying material for thought about other aspects of art than the drawing and observation of objects, and making them acquainted with some of the great traditions of art.

It is most necessary, as already pointed out, that all the material used as copies should be of the highest quality. The examples of every type of work examined must belong to the finest schools of the particular forms of art that they bring before the class, that the pupils may become acquainted with master work only. We do not waste their time upon inferior literature; why should they laboriously acquire trivial knowledge from inferior art?

[1] The first two articles were published in January and February, 1904.

Whatever is chosen for study—heraldry, brush-work, lettering, or whatever it is—must be, to be really educational, not merely the best that the

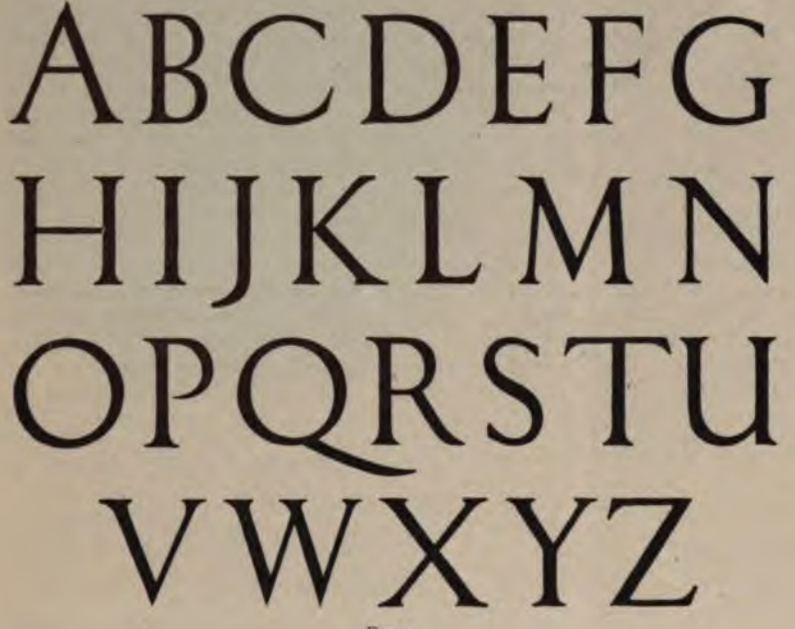


Fig 7.

teacher can obtain but the best that there is; work by acknowledged masters of commanding reputation. The finely drawn and gloriously coloured devices of the best heraldry seem, besides their value as splendid examples of design, and the fact that they are part of the necessary education of every art worker, to have been specially intended to delight young people and to afford them historical information in a way that they are most willing to receive it. The pupils must know the machinery of heraldry as the best tradition has given it; the great heraldic lion, his expression and his attitudes; how crowns, crosses, castles, birds and beasts were drawn by the best masters of such drawing, and how they were, and are still, used as symbols of authority, piety, power, and so forth, in all kinds of decoration. No finer heraldic material could be procured for the purpose than that supplied by the excellent coloured reproductions contained in Mr. St. John Hope's work on the stall plates of the Knights of the Garter in St. *George's Chapel, Windsor.* These coloured illustrations give examples of shields of arms, helmets, crests, and mantling, varying from the mos simplicity of treatment to the utmost magni Heraldry is, from its nature, of very f occurrence; shields, and crests, are found painted, enamelled engraved, on mon chests, walls, manu and metal work, in variety, giving valu formation to the ori ownership of all s objects. Photograph casts of fine specin the arms of kings personages of histori portance should also cured. The letters inscription on the Trajan's Column, se Rome in the year A supply the most example of a Rom phabet. These lette been drawn out to scale by Mr. G. croft Rhead and pu together with some case letters, inclu Roman type used colas Jensen, the fifteenth-century Venetian printer. The alphabet given in Fig. 7 is taken from a six century Italian book of letters. The

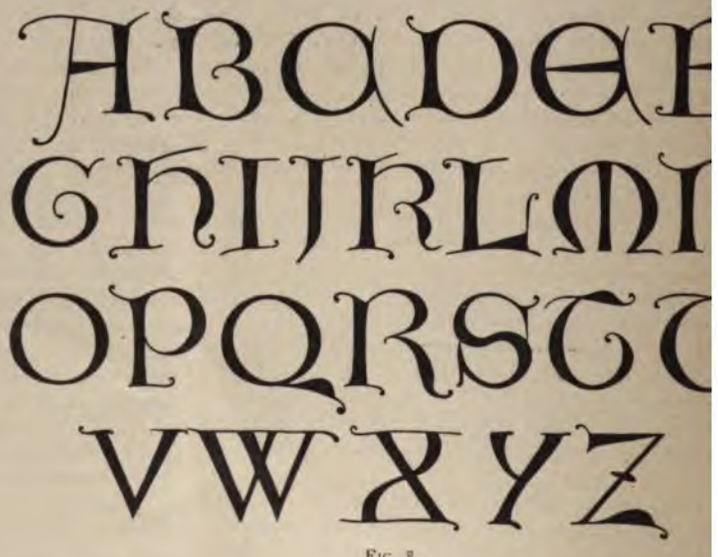


Fig. 8.

alphabet in Fig. 8 is from a fine fifteenth-Italian manuscript in the possession Douglas Cockerell. Some casts and photo or rubbings, of inscriptions should also be i in the school collection.

The work of the Persian, Hispano-M

arly Italian pottery painters will supply le copies for the exercises in brushwork tions. Large photographs of the plates and these workers exhibited in the Victoria and Museum are to be obtained there; a few d plates of tiles and dishes are included in ies of "Portfolios of Industrial Art," also ed at the Museum. Pupils who are en- n drawing flowers and foliage from nature, copying the floral work of the pottery s, should be shown photographs of drawings its by great artists such as Leonardo da nd Albert Durer. These are to serve as of the careful observation upon which the decorative impressions unded and as guides to nd of nature drawing nust be cultivated by in order to invest their re ornamental patterns, he time comes for ad- work, with a degree of lity and distinction dis- by the oriental exam- A fine sixteenth-century would be a valuable ion for a school draw- s, not difficult to obtain, botanical work of the f of the eighteenth cen- th beautifully engraved coloured by hand is come by; both exhibit it types of faithful re- ations of nature.

cises in original design first be restricted to evolved from the exam- plain pattern-work al- copied, in order that ity with the principles thods employed by well- minds may be obtained. pils can then be required rate single letters or in- ns, fill panels and com- rders in definitely prescribed ways, which it possible to illustrate by means of historical es. The letters H and S in Fig. 9 are ed with two continuous interlacing cords ed on a simple plan capable of infinite ations; analysis of the black-and-white on the jar (Fig. 1) opens up the equally hensive principle of counterchanging. The at all exercises are derived from previously studies will lead to the development of a of memory-drawing having always a direct upon the work in hand, instead of being ced merely for the sake of exercising the y. The filling of given spaces with ornament from flower studies, the only type of ng usually undertaken, is not very edu- l; the pupils' appreciation of their success re often rests entirely upon the teacher's ion of approval or the reverse. If the teacher can point out that such an exercise as that of drawing a regular figure of interlacing cords, or of completely covering a surface with black and white spaces of exactly the same shape, does not work out consistently, the pupils are convicted of error in a way that is within their comprehension. Other problems in design of a like nature will readily suggest themselves to anyone who carefully studies the work of the great periods of pattern designing. Floral work can afterwards be grafted upon the plain patterns that the pupils have made, at first with restraint, following closely the given forms (see the letter O, Fig. 9). Afterwards, when the habit of keeping all the elements

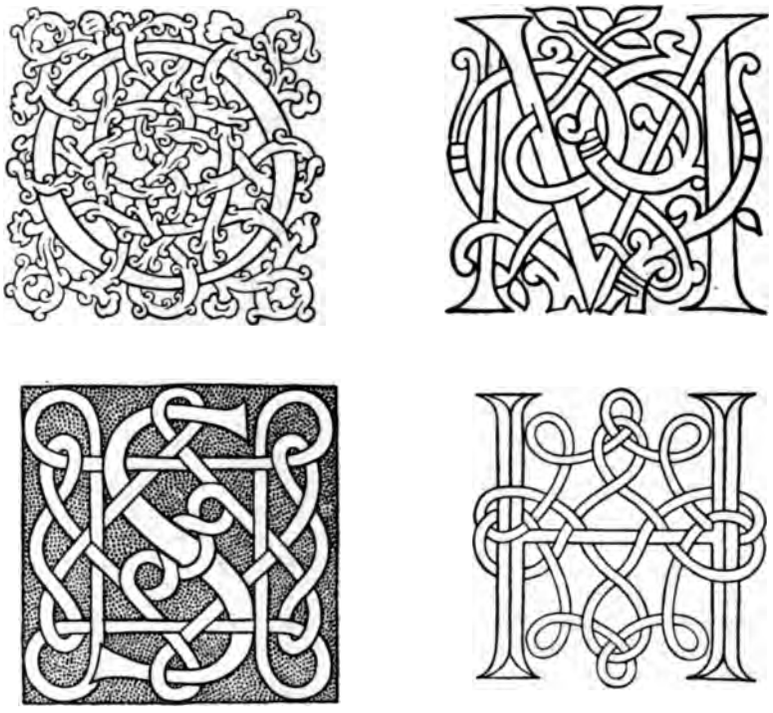


FIG. 9.—Initial Letters from Early Printed Books.

of the design under perfect control has been developed, the process of ornamentation can proceed with the greatest freedom. The flowers and foliage used in pattern decoration should be drawn from the memory of plants rather than from the memory of particular drawings of plants, that the almost indefinable quality known as a conventionalism may be unconsciously added.

The pupils are now in a position to take much more extensive views of their work—views that will be dependent upon circumstances, such as the tastes and opportunities of the teacher, the type of school, its situation, and other similar considerations. The dominant aim must, however, remain always the same; to give a general course of all kinds of art without specially developing knowledge of any one part of it at the expense of the rest. The exercises will continue to be worked in the same way, but will cover a new range of sub-

jects which may be classified as figure-work, study of buildings, illustration of history, and so on, in order to include the work of many crafts under some common head other than painting, sculpture, or architecture.

A knowledge of figure work entails the study of a variety of material. It is to be derived from drawing from casts, prints, photographs, coloured reproductions of illuminations, and pictures, &c. Systematic drawing from life can hardly be attempted in ordinary school-classes, nor is it, perhaps, desirable that it should be, although good pencil-studies of heads and figures are done in many girls' schools. The casts used must not be restricted to antique examples only, but should include a selection of the work of other periods as well. The examples may be taken from all kinds of work in the round and relief, wood and stone carvings, coins, medals and gems, but must always be selected specimens of the best schools only. Casts of work by the great masters of antiquity, the early Italian, English and French stone and wood carvers, are to be obtained from numerous dealers. The electrotypes of the early Italian medals in the Victoria and Albert Museum, to be had of Messrs. Elkington, of Regent Street, are not so well known, but would be equally useful. The second volume of the "Album du Musée de Sculpture Comparée" contains excellent reproductions of the greatest French sculpture. The photographs of the figures on the west front of Wells Cathedral, published by T. W. Phillips, of Wells, give examples of similar English work; the photographs of fine Greek figure sculptures from the British Museum, and of some of the beautiful wood and ivory carvings and bronzes at South Kensington, must not be forgotten. All these examples are to be drawn and shaded very carefully in pencil; if the whole photograph or cast is too complicated to finish in two lessons or so, a small portion—a single head, hand, or a piece of drapery—may be set.

The marvellously simple figures from the Athenian painted vases would serve as copies for drawing with the brush. Coloured figure-drawing corresponding in spirit and subject to the mediæval sculptures could be carefully copied from the miniatures of the illuminated manuscripts from which the floral designs were obtained; the coloured prints published by the Arundel Society will supply further examples. The three "Portfolios of Illuminated Manuscripts in the British Museum," published by the Trustees, are the best coloured examples of miniatures, borders, and initials to be had; they will prove of great service for a number of purposes. Copying from these reproductions in colour and drawing in pencil from photographs of pictures in the National Gallery, prints of drawings by old masters, casts, and so forth, should be done simultaneously.

If architectural drawing is undertaken, and a certain amount should certainly be done, buildings or portions of buildings of various dates must *be drawn from* photographs. The photographs *should represent buildings that* the pupils have a reasonable opportunity of seeing; the ideal seri would illustrate the architectural history of t town they live in, representing the great churche the town hall, the castle, the bridges, &c. A dwelling in London should know the appearan and something of the history of such edifices Westminster Abbey, St. Paul's, the Mansi House, the Guildhall, the Tower, and Lond and Waterloo bridges. These studies should ai at making pupils acquainted with the uses an histories of the great types of buildings of variou countries and periods, instead of the text-boo examples of mouldings and details labelled Greek Roman, and Gothic, that usually pass as "archi tecture." Capitals, figures, friezes, enriche columns, and the like, must not be overlooked they should be drawn from casts and photograph but for the sake of their beauty as carvings o foliage, beasts, strapwork, &c., not as if the were only the essential parts of buildings wort noting.

Another interesting method of classifying th examples would be to arrange them into grou illustrating particular periods and attach the a work to the teaching of history, a subject wi which it is very intimately connected. But if th is done care must be taken that the historic importance of the example drawn is not a lowed to outweigh the artistic purpose for whic it is studied, or an error similar to that alread pointed out in subordinating art work to scien teaching will result. Portraits of English king ecclesiastics, poets, artists, statesmen, and soldie of all ages, can be found in the collection of phot graphs of pictures and drawings in the Nation Portrait Gallery, published by Messrs. Walker a Cockerell, and prints and reproductions of all manne of things bearing upon the life of our forefathe are to be found in plenty. But nothing must b included in the school course that is not of th greatest value as art work, or inserted merely fo the sake of filling a gap in the series. Man portraits inferior as works of art are quite propul included in the national collection on account o the interest attached to the persons they represent In the historical view of art work there is alway danger that the archæological interest may ove balance the artistic. Sets of examples of mere limited scope, illustrating the historical develop ment of particular classes of objects that special interest the teacher, should also be brought to gether. For example, the history of ships, o books, written and printed, of needlework, of fur niture, &c., could be made the subject of specia sets of copies and examples.

Orderly arrangement of material and a me thodical plan of dealing with the pupils' work as accumulates are valuable aids to directness o teaching. Both the examples studied and th work produced must be thoroughly under contr if the pupils are to derive full benefit from the own efforts without waste of time. A number plain oak frames should be provided that the mo valuable copies may not be subjected to the we and tear occasioned by those beginners who bru

wrists and elbows to work in their early drawing operations. The frames not in immediate use will serve to decorate the class-room walls, which should be made as attractive as possible with well-arranged casts, prints, and photographs. The frames should have movable backs to allow of frequent change of subject, lest the examples grow stale. If a pupil be drawing a small portion of a complicated print or photograph, it will sometimes be found necessary to paste a piece of paper over the glass of the framed copy with an opening cut exposing the part to be drawn; some pupils beginning this work are bewildered by the apparent extent of the undertaking and are unable without this assistance to concentrate their attention upon the piece selected. All drawings should be made upon loose sheets of paper of a uniform size; quarter imperial sheets are probably the most generally convenient. When finished each pupil's drawings should be placed by themselves in a brown-paper cover, to remain in charge of the teacher, who must always be able to see at a glance the progress of a particular pupil and to deliver rapidly to each at the commencement of the lesson the studies that may be required as the basis of the next exercise. In drawing from nature each pupil should be provided with a single piece of foliage, shell, insect, or whatever object is to be drawn: this should always be carefully placed upon a piece of plain white paper in order that it may be seen quite clearly and that the matching of the relative value of the colours and tones may be simplified as far as possible.

It is not pretended that the subjects and examples chosen for study in the course of work that has been sketched out form by any means the only possible material. But they have been deliberately selected as being of practical educational value. The subjects first undertaken, the heraldry, lettering, pattern designing, &c., have no dependence upon any particular craft, but are the common property of all art-workers. There are no craft restrictions necessitating explanation or any reservations to be made in discussing the subject. Apart from their educational value as fine design and as exercises in the technique of drawing and painting, they are subjects that all who are about to follow artistic occupations, or who would know something of art, must become acquainted with sooner or later, and they are very necessary steps towards the detailed examination of historical work of all kinds that forms the next phase of instruction. The after results of even the briefest course of thoughtful study of all kinds of art, in the widest understanding of art, cannot but be of far-reaching extent, however it may be practically carried out. If all, at their very first introduction to the subject, could gain some insight into art that would enable them to take an intelligent interest not only in nature, but in many kinds of objects of human workmanship as well, we should have made great progress in our system of education; progress that, I fear, will hardly result from our present methods. The pupils, with power of observation and imagination already developed and enlivened, will be more ready to face the limitations imposed by tools, processes, and materials, when they come to workshops and technical art-schools. When such restrictions drive all their ingenuity and study into definite grooves they will start with more or less cultivated knowledge of art and quickened perceptions of what is really fine. The cultivation of these faculties is of the first importance; it is too often postponed until the pupil, ignorant of all else, is thrown back upon regarding technical ability as the sole ideal that is to be aimed at. It is considerations such as this that make the task of the art teacher bear heavily upon those who fully realise their responsibilities; for they, more than any engaged in education, must teach out of individual knowledge and understanding of their subject. They alone have no written text-book that they can fall back upon to bring the work of their class up to even the dull level of respectability.

The recent development of science teaching has been very great and has certainly produced corresponding results. But that art has suffered from neglect, although its importance cannot be overstated, is undoubted. It would seem reasonable to suppose that elementary education should require a well-balanced development of all intellectual faculties without giving an undue preponderance to one set; but it is a supposition that practice does not at present bear out. That the subject to be pushed should be the one that deals mainly with strictly material interests also plays its part in stigmatising all artistic activities as merely "sentimental" is to be regretted. For the great aims of art as well as those of science must have their origin in the first exercises undertaken in the elementary school.

THE INSPECTION OF SECONDARY SCHOOLS.[1]

By An Inspector.

WE have been told on many recent occasions what qualities the Inspector should possess. It is a formidable list, and has doubtless given rise to much searching of heart. To state my qualifications for the work would be to disclose my identity; and that would be inconvenient. Let it suffice that the schools I have inspected in late years are many and varied.

The problem set is to estimate the efficiency of a school. Considering the class from which the pupils are drawn, the available funds, and various other factors, such as (in some cases) the requirements for earning the Board of Education grant, does the school provide the most suitable education? Are the selection of subjects and the time assigned to each settled according to a well-considered plan? Is there a carefully graduated syllabus for each subject? Is the teaching of the

[1] Articles on inspection from the points of view of a headmaster and an assistant-master appeared respectively in our issues for December, 1903, and March, 1904.

lowest classes entrusted to competent teachers? Is the work of the younger members of the staff under the personal supervision of the headmaster?

These and many other questions have to be answered, and by means of an inspection extending over a very short space of time. Before answering them, the Inspector must get some general idea of the work, and the limitations under which it is carried on; and for this purpose he should be supplied with full statistical information.

This should include (*a*) a list of the staff with details as to education, training, previous teaching career, number of hours' teaching in the week, salary, &c.; (*b*) statistics of the pupils, giving details as to age, profession of the parents, scholarships, &c.; (*c*) time tables (i.) for each class, (ii.) for each teacher; (*d*) a syllabus of work for each class in each subject in three columns, one for each term, with the full titles of text-books used. The prospectus, the school magazine, papers set at the last internal examination together with the pupils' answers (if available), &c., all help the Inspector in his arduous task.

It may seem an exorbitant demand on the part of the Inspector; yet it may safely be said that *his report will gain in value in direct proportion to the knowledge of the school acquired before the inspection.* The forms need not all be filled in by the headmaster; each master will do his share. In a well-regulated school the headmaster is in possession of the time tables and syllabus [(*c*) and (*d*) above], and a copy can be made without much trouble; nor should it be difficult to supply information about staff and pupils. The task only becomes heavy where there is a lack of system on the part of the headmaster.

From a careful examination of these papers, the Inspector gains a fair idea of the general condition of the school. The syllabus of each subject gives him valuable indications as to methods employed; if details about the last internal examination have been supplied, he is in a still more favourable position. He can now proceed to what is often held to be his most difficult duty, namely, judging the capacity of the teachers. It is said that it is impossible to arrive at a correct opinion, after seeing a complete stranger teaching for half an hour. That is true; but is it the Inspector's fault if the teacher is a complete stranger? When the information required has been given freely and fully, the Inspector has become acquainted with the teacher's work. He might, of course, also receive preliminary information about him from the headmaster; but this is altogether undesirable.

The presence of the Inspector in the class-room is a disturbing factor, even in the most favourable circumstances. I make it a practice to efface myself as much as possible. I sit at the back of the room, where the pupils cannot see me; I do not interfere in the teaching, except towards the end of the lesson, when I ask the teacher if the pupils might do a piece of written work; I address the teacher courteously; and yet my presence is felt. Even the experienced teacher may grow a little uncomfortable; the beginner, and above all the untrained beginner, is distinctly nervous. Sometimes this nervousness only slightly impairs the quality of the work; in other cases it brings out bad features of the teaching in a remarkable way. It is probably the distinguishing sign of the untrained teacher that he does not realize the possibility of defects in his work, and puts down failure to the stupidity of his pupils. Such a teacher will positively howl at his pupils, pouring sarcasm on them, which the presence of a stranger renders all the more painful. I have spent many a weary hour watching dull teachers; I have been made utterly miserable by exhibitions of noisy incompetence. On the other hand, I remember teachers whose work it was beautiful to watch, and the hour has passed all too speedily.

In some schools visitors are welcome at all times, and the presence of the Inspector hardly disturbs the ordinary course of the work. In others the teacher is the supreme and only lord of his class-room, and has even been known to resent the presence of his headmaster. In his eyes the Inspector is a spy, and the pupils share his hostile attitude. Such masters have been known to leave the class-room when the Inspector came; the "inspection" was then reduced to an absurdity.

The specially arranged "show lesson" is abhorred by the Inspector; an ordinary lesson gives him quite enough information. It may only deal with part of the work; but a syllabus and a talk with the teacher at the end of the lesson, and often the exercise books of the pupils, will enable him to arrive at a very fair general opinion on the competence and methods of the teacher. He will also have seen something of the physical conditions which prevail; he can answer such questions as: Are there signs of over-strain in the teacher and pupils? Do the pupils sit well, *i.e.*, neither with the head close to the paper in writing, nor with the body in a stiff and constrained attitude? Is the lighting good? Is the room large enough for the class? Is there a good supply of fresh air? Is there some attempt to make the room attractive by means of a pleasant colouring of the walls and good pictures? "You are descending to trifles!" Are they trifles?

The earnest teacher will not let the Inspector go without asking him about his impression; or if too timid for that, he will be grateful for a few words of recommendation and criticism, which the Inspector will not fail to give. In the earnest teacher's work there is always a good deal to praise; his failings are usually due to the hard work exacted from him, and his consequent inability to remain up-to-date. Here the Inspector can be very helpful.

Before leaving the class-room I should like to say a word about the size of the class, because I disagree with the statement made by "a Headmaster" that a master cannot teach thirty boys but only drill them. I agree that thirty should be the maximum for a class, and that twenty is a much better number; but I can call to mind numerous classes of thirty and even more which have been admirably taught—by trained teachers.

ere the secret lies. I have seen few
ıchers who were not trained; and the
eachers sometimes teach, but usually
lass, however small it may be.
ɜ talk with the headmaster can hardly
nor is this desirable. It is difficult work,
ıt every headmaster likes to hear the
ı, except where it agrees with his own
ɜ Inspector has to rely here very largely
ımon sense and knowledge of human
ɔriticism which will bear fruit in one
mply irritate in another. "An Assis-
" says that no comment should be
ıe headmaster of which the assistant-
not been informed; certainly a "safe
ıot likely to be adopted. Take a con-
nce: the form-masters of the lower
. school take the teaching of French, a
f which they know very little, their
ıd pronunciation being equally bad.
tor suggests that the work of the be-
uld be entrusted to a specialist. Now
inctly a "comment": surely the In-
not bound to inform every teacher
before proceeding to suggest to the
a change in the organisation. If the
debarred from alluding to the assistant-
ɔept in terms of praise, his conversation
admaster will be practically futile.
be alive to the difficulties under which
ɜ carried on; he will sympathise with
ork conscientiously for many hours and
But he should not be expected to close
gross incompetence, and to fancy his
e if he has said that all is for the best
t of all possible schools. The better
admaster is himself not blind to the
of his assistants, and is often able to
to rectify the impression formed by the
ınd willing to make changes beneficial
If, on the other hand, the headmaster
a narrow man, the Inspector certainly
ery careful in his remarks.
ırt must be pervaded by the same spirit
ɔector's work generally. It must state
kly and concisely, with as few super-
ɔossible; and it must contain feasible
ɜ for improvement. A detailed criticism
ıers is out of place; but the curriculum,
nodation, the social side of school life
d matters, have to be considered with
is eminently desirable that every in-
ıody should have a "moderator" of
ɔo would be a guarantee for a certain
of treatment, without imposing irksome
on the Inspector.
conclude with a personal note, I cannot
s my gratitude for the way in which my
ɔeen welcomed by many headmasters
ınt-masters alike; and most inspectors
re my view. There are some in our
ı give more trouble than help, I fear;
look at the photographs on the wall
should be following a lesson on Euclid
ıe whose subject is, let us say, science,
and who condemn a brilliant teacher of, let us say, French, after looking into the class-room for five minutes; but such cases are rare. As a body, we are deeply conscious of the great work which lies before the schools of this country; we appreciate all earnest endeavour, however tentative; we are grateful for the important duties with which we have been entrusted, conscious of the responsibility imposed, hopefully striving to help.

SELECT LISTS OF BOOKS FOR THE SCHOOL LIBRARY.[1]

PHYSICS AND CHEMISTRY.

By R. Mullineux Walmsley, D.Sc.
Principal of the Northampton Institute, London, E.C.

Physics.

"Natural Philosophy." Prof. A. Deschanel. (Blackie.) 18s.
"Text-Book of the Principles of Physics." Dr. A. Daniell. (Macmillan.) 21s.
"Theory of Heat." J. Clerk Maxwell, F.R.S. (Longmans.) 4s. 6d.
"Elementary Treatise on Heat." Prof. Balfour Stewart, F.R.S. (Clarendon Press.) 8s. 6d.
"Light, Visible and Invisible." Prof. S. P. Thompson, F.R.S. (Macmillan.) 6s. net.
"Experimental Researches in Electricity." Michael Faraday. (Quaritch.) Three vols. £2 8s.
"Elementary Lessons in Electricity and Magnetism." Prof. S. P. Thompson, F.R.S. (Macmillan.) 4s. 6d.
"The Electro-Magnet." Prof. S. P. Thompson, F.R.S. (Spon.)
Joubert's "Traité élémentaire d'Electricité." Trans. by Foster and Atkinson. (Longmans.) 7s. 6d.
"Signalling Across Space." Sir Oliver Lodge, F.R.S. (The *Electrician* Office.) 2s. 6d. net.
"Spinning Tops." Prof. John Perry, F.R.S. (S.P.C.K.) 2s. 6d. net.
"Soap-Bubbles." C. Vernon Boys, F.R.S. (S.P.C.K.) 2s. 6d. net.

Chemistry.

"The Principles of Chemistry." By D. Mendelieff. Trans. from Russian. (Longmans.) Two vols. 36s.
"Text-Book of Inorganic Chemistry." G. S. Newth. (Longmans.) 6s. 6d.
"Text-Book of Organic Chemistry." Drs. Perkin and Kipping.
"Dictionary of Applied Chemistry." Dr. T. E. Thorpe, C.B., F.R.S. (Longmans.) Vols. I. and II., 42s. each. Vol. III., 63s.
"Essays on Historical Chemistry." Dr. T. E. Thorpe, C.B., F.R.S. (Macmillan.) 12s. 6d. net.

[1] These lists were commenced in The School World for February, 1904, and were continued in the issue of last month.

"Chemical Lecture Experiments." G. S. Newth. (Longmans.) 6s.
"Experimental Proofs of Chemical Theory." Sir William Ramsay, K.C.B. (Macmillan.) 2s. 6d.
"Short History of the Progress of Scientific Chemistry in our own Time." Prof. W. A. Tilden, F.R.S. (Longmans.) 5s. net.
"The Chemical History of a Candle." Michael Faraday. (Chatto and Windus.) 4s. 6d.
"The Story of the Chemical Elements." M. M. Pattison Muir. (Newnes.) 1s.

ENGLISH POETRY UNDER THE STUARTS.[1]

THE third and fourth volumes of Mr. Courthope's "History of English Poetry" are published together. They cover the period from the Spanish Armada to the Revolution, from Spenser to Dryden. In the third volume all forms of poetry except the dramatic are discussed, and the fourth is wholly devoted to the drama. It would be presumptuous to praise at length the work of so well-established a critic and historian of literature as Mr. Courthope. Suffice it to say that the same qualities that marked the previous volumes, the judgment, the scholarship and the literary skill, are equally characteristic of the third and fourth books. A reviewer may do better service by indicating the scope of the work and the nature of the principles that guide the author than by lavishing eulogy, however well deserved.

Mr. Courthope does not set out to write a literary history in the common biographical sense, nor does he, like Taine, compose a series of brilliant appreciations of selected authors or selected movements. "The business of historical criticism," said Mr. Courthope in the preface to his first volume, "is to trace the system of thought that connects age with age and the almost imperceptible gradations which mark the advance of language and metrical harmony." That there exists a sequence and connection of thought in English poetry, and that poets are not to be mapped off into schools with rigorously drawn divisions, Mr. Courthope strongly believes. His subject has a unity, because, of course, the poetry is written in the English language, but, more important, because it is the "expression of the imagination not simply of the individual poet, but of the English people." And as the history of the English people is one, so is that of its poetry; and the aim of the historian is "to use the facts of political and social history as keys to the poet's meaning, and to make poetry clothe with life and character the dry record of external facts."

The last great poet to be described in the second volume was Spenser. In the third volume the author traces the development of English non-dramatic poetry down to Dryden. The period (1588-1688 roughly) is one of great political and social activity, and Mr. Courthope is at pains to show how poetry was affected by the forces at work in the nation, the influence of the court of the Stuarts, the disturbance of thought that preceded the civil war and the shock of the war itself, and, lastly, the effect of the Restoration. The influence of the court is of great weight in determining the course of development; under its leadership, "the instinctive continuous movement of thought and language in the nation" showed itself "partly in the simplification of ideas and partly in the harmonious mode of expressing them." The poetry becomes more definitely English, and not only less imitative of foreign originals, but less dependent for inspiration on either mediaeval learning and education, or classical ideals and literature. But though the principal stream, which ends in Dryden, is more and more national, and less and less involved, it does not bear with it the great volume of poetical production during the period. The mighty disintegrating forces set in motion by the Renaissance result in many by-streams of poetry—the pastoral poets, the translators, and above all, the schools of "wit," metaphysical, theological, and other. Mr. Courthope fully discusses the origin and characteristics of all these types. He bestows also reverent care upon Milton, who stands neither in the direct line of succession, nor as a signal example of a special school, but as "the centre upon which all the great imaginative movements of his age converged."

The fourth volume treats of the rise and progress of English dramatic poetry, the life of which practically coincides with the period. The field has been covered by other critics, especially Shakespearean critics, and Mr. Courthope justifies at some length his own method of dealing with the drama, and particularly with Shakespeare, as against the aesthetic *à priori* school of Schlegel. It is impossible to summarise the five chapters in which Shakespeare's dramatic development is expounded. They are perfectly consistent with the main principles of the history, and, while they give due weight to the influence of Marlowe and of Lyly, of the national feeling stimulated by the Elizabethan age, and of the conditions of the stage, they do not fail to emphasise the importance of Shakespeare the man, whether his genius is seen converting the drama as he found it into the drama as he left it, or infusing into his greatest plays the personal passion that is so evident yet so mysterious. After Shakespeare the dramatists, except perhaps Jonson, are such "by profession, poets only in a subordinate sense," and accordingly it is comparatively a simple thing to exhibit the varying effect upon the composition of plays the determining factors, the "dramatic taste of the city" in the earlier years tempered by the influence of the court, and in the last years the complete subserviency of the writer to his audience, and the final displacement of the poetic drama by prose.

[1] "A History of English Poetry." By W. J. Courthope, C.B., M.A., D.Litt., LL.D., late Professor of Poetry in the University of Oxford. Vol. iii., oct. pp. xxxii. + 533; Vol. iv., oct. pp. xxix. + 476. (Macmillan.) *10s. each net.*

THE EMPEROR NERO.[1]

WE have read this book with mixed feelings. Mr. Henderson's laborious study has marshalled a mass of evidence much of which is new to the average student, and he has done a real service by collecting and sifting it. His historical sense is good, he has something of statecraft, his knowledge of strategy and tactics is far above that of most historians: consequently he throws new light on much of Nero's reign, particularly on his Far-eastern policy and its working. But he lacks the dispassionate fairness which we look for in a historian of the first rank—which is essential, we had written, but remembered Gibbon. He is too aggressive in his praise of Nero, and too impatient with those who think hardly of him. Moreover, his style is a poor thing, full of preciosity and affectation, more often ridiculous than elegant. We would have preferred to pass this over with a hint, but Mr. Henderson is not the only Oxford man that affects this, and we fear it must be encouraged at that university.

Mr. Henderson's lack of judgment is the more to be regretted because there undoubtedly is a good deal of truth in his view. Nero was human to begin with, no doubt, and the common idea makes him a monster. We should welcome a historian who could show how a human being could be led to commit the crimes which undoubtedly Nero did commit. No doubt Agrippina was a provoking mother, but she was his mother, and Nero became a parricide. We get, in fact, a much more natural impression of a real Nero from examining a series of his portraits (some of which Mr. Henderson reproduces) than from the description in this book. Even if the Uffizi child-bust be some one else, there are enough of them to enable us to trace the gradual corruption of a sensuous but not ungenerous nature to something very horrible. Towards the end, Mr. Henderson is constrained to admit more than he likes about his hero; but some of the intermediate stages remind us too much of Mr. Chadband or the Shepherd. Nero's artistic and poetic gifts, too, can hardly have been considerable. In dealing with public policy, Mr. Henderson is on firmer ground; and we are ready to admit that Nero has been misjudged in these respects, without giving him credit for the gifts of a heaven-born ruler.

We are glad to add that it is Mr. Henderson who convinces us of the Emperor's merits: the facts he states speak for themselves, and this is a contribution to our knowledge of the times which must not be overlooked. Here, indeed, lies the chief value of Mr. Henderson's book. In scholarly fashion, he gives full references to authorities at the end, and his evidence, gathered from very numerous sources, will be most useful to the historical student.

We had marked a number of points on which criticism would be useful, but this journal is not the place for such treatment as they demand. As Mr. Henderson's fault lies generally in partisanship, a criticism of the point of view is all that is necessary here in order to set readers on their guard and to warn them that they must use their own judgment. Thus Mr. Henderson will not believe that Nero had any hand in burning Rome; he brushes aside the contemporary belief as impossible, and describes the supposed agents of the Emperor who "with fierce threats and insane glee stayed their hand, hurling fiery brands broadcast, now in delirious merriment, now greedy of further sack and plunder, shouting that they had authority for their savage deeds." The picture is obviously overdrawn, painted, in fact, with the colours of melodrama. The question is rather one of history than of feeling. Had Nero at that time become partly mad? was he so intoxicated with power that his desires seemed to be the only things in the world worth considering? In view of what he actually did during his life, it is as easy to believe that he set Rome on fire as to believe that he was the benevolent and tender-hearted father of his people, giving them corn at half price because they were hungry, and opening refuges for the homeless. He may indeed have done both, and yet not be an angel of light. The reader will see that Mr. Henderson's highly-coloured style has affected our criticism, and that is the inevitable result of such advocacy. We cannot close, however, without repeating, in order to leave no misconception behind, that there is serious historical research in this book, and that the reader who neglects it because of its exaggerations will make a mistake.

[1] "The Life and Principle of the Emperor Nero." By B. W. Henderson, M.A., Fellow and Tutor of Exeter College, Oxford. xiv. + 529 pp. With three maps and sixteen illustrations. (Methuen.) 10s. 6d. net.

SOME RECENT FRENCH BOOKS ON NATURAL HISTORY.[1]

FOREIGN text-books and foreign educational methods must always be of great interest to the teacher who is anxious to keep abreast of the times. Especially salutary, perhaps, is an acquaintance with the educational ideals of a

[1] *Histoire des Animaux.* Par E. Aubert. 350 pp. 2fr. 50c.

Histoire des Plantes. Par E. Aubert. 336 pp. 2 fr. 50c.

Les Phénomènes de la Vie chez l'Homme. Par E. Aubert. 232 pp. 2 fr.

Histoire de la Terre. Par E. Aubert. *Phénomènes actuels*, 156 pp., 1fr. 40c.; *Phénomènes anciens*, 187 pp., 2fr.

Lectures et Promenades Scientifiques. Par E. Aubert. 269 pp. 1 fr. 60c.

Histoire Naturelle des Etres Vivants:

Tome I., Fascicule I. *Cours d'Anatomie et de Physiologie animales.* Par E. Aubert. xii.+416 pp. 4fr.

Tome I., Fascicule II. *Cours d'Anatomie et de Physiologie végétales.* Par E. Aubert. xi.+308 pp. 3fr.

Tome II., Fascicule I. *Reproduction chez les Animaux et Embryogénie.* Par E. Aubert et C. Houard. 187 pp. 4fr.

Tome II., Fascicule II. *Classifications zoologiques et botaniques.* Par E. Aubert. 829 pp. 7fr.

Cours élémentaire d'Hygiène. Par E. Aubert et A. Lapresté. 252 pp. 1 fr. 40c. (Pari E. André Fils.)

country differing widely in tradition and racial temperament from our own. In examining the series of books named below, the first interest was naturally to try to discover in what respects they reflected a Gallic spirit and attitude; the second, and greater, was to compare them with books of similar nature in the English language—hoping to find in them some qualities which might be a help and stimulus in our own work, and perhaps others furnishing some little occasion for British self-complacency. Finally the books were to be considered impartially as text-books of science *qua* science.

The scope of the books is avowedly dictated by official syllabuses, and indicates courses of study broadly corresponding to those laid down by our own Board of Education and University authorities. The faculty of luminous expression has often been recognised as pre-eminently the gift of French writers, and it is found to a marked extent in these books. Nowhere have we noticed any ambiguity of statement, although it is, as Huxley—himself a master of the precise use of words—remarked, peculiarly difficult in natural science to make any statement that cannot be misunderstood. Another very striking feature is the genius—the word is scarcely too strong—which Prof. Aubert shows in drawing up summaries. The admirable diagrams (*figures schématisées*), presumably his work also, display the same "scientific use of the imagination" so often mentioned but so rarely manifested. Is there not required in the skilful summarising of a mass of facts, in the conception of an illuminating morphological diagram, something of the high quality of mind which goes to the framing of a natural law? The use of different sizes of type to indicate the relative importance of various passages is somewhat overdone, and has an irritating effect on the eye.

The general similarity of these courses of work to some of our well-known syllabuses suggests that nothing but good could result from the introduction of such books into our schools. The principle of using foreign text-books as an indirect means of familiarising pupils with the language has already been adopted with some success, but, we believe, not to any great extent in science work. And yet it is precisely in natural science that such a method would have the greatest value; in the direct association of actual objects with their description that a language becomes most vividly significant.

The volumes most likely to commend themselves to the teacher are the six first named. The "Histoire des Animaux" deals in an elementary manner with the structure, habits, life history, &c., of typical members of each of the great groups of the animal kingdom; while the "Histoire des Plantes" is a companion volume on the botanical side. Both books are richly illustrated, and in all respects compare most favourably with corresponding books in our language. "Les Phénomènes de la Vie chez l'Homme," as an *elementary text-book* of human physiology, is almost equally admirable. We note, by the wa the misleading statement—too common also English books—that "Les hydrates de carbone les graisses sont dits aliments calorifiques thermogènes, parce que leur combustion da nos organes produit la chaleur nécessaire l'accomplissement régulier de nos fonctions and no mention is made of argon in the l (p. 54) of gases comprising the atmosphe The two volumes of the "Histoire de la Terre form a capital text-book of elementary geolog that on "Phénomènes anciens" being especial valuable for its clear statement of the strat graphical and palæontological side of the subjec In many respects this volume is ahead, in ou opinion, of any English geology text-book similar scope. "Lectures et Promenades scie tifiques" consists of short "object lessons." It i good of its kind, but presents no very nov features.

The four volumes of the "Histoire naturelle d Êtres vivants" are more academic in charact than the foregoing, and are designed for medic students and university students of biology rath than for school use. The work possesses all th admirable qualities of the smaller books—the thr first-named of which are indeed largely abridge from it—and throughout its 1,740 pages there apparent a unity of plan, a masterly breadth grasp, which is not the least of its many valuab features. The "Anatomie et Physiologie animales seems to us the least successful of the four part from the disproportionate attention given to th human subject; but this is to a great extent con pensated for by the broader treatment of zoolog in the volume on "Classifications," in which th animal and vegetable kingdoms are systematicall reviewed. This volume alone might claim to be fairly complete work on biology, since more tha 2,000 judiciously selected genera are described i illustration of the characters of the princip groups of animals and plants. It was foun necessary to treat of the development of animal in a separate volume, the "Reproduction Embryogénie" of the second and enlarged editio of which M. Houard is joint author with M Aubert. In this volume the essentials of com parative embryology—one of the most fascinatin and at the same time most difficult branches zoology—are clearly described and illustrated b valuable diagrams. It must be admitted that th "Histoire naturelle des Êtres vivants" ranks hig among modern treatises on biology.

The "Cours élémentaire d'Hygiène" differs fro familiar text-books on hygiene chiefly in th prominence given to the work of bacteria and t the evil effects of alcoholism. In the account malaria no mention is made of the researches Major Ross; while the horrors of drunkenne —which we would by no means belittle—a described in a style which verges on bathos. Or lurid passage ends with the plaintive questio "Qui pourrait ne pas s'émouvoir de pareill infortunes?" Certainly not the British schoolboy we fear he would scoff.

LATIN AND GREEK AS A MENTAL TRAINING.[1]

By W. H. D. ROUSE, M.A., Litt.D.
Headmaster of Perse School, Cambridge.

As regards the importance of Latin and Greek in mental training, not their most determined advocates have overstated the case. I hope I shall not be accused of cant in saying this. My own interests lie largely in Latin and Greek, but not by any means wholly so. I ask pardon for speaking of myself, but I do not see how we are to get along unless everyone does speak of his own experience. I have dabbled in a good many languages, and find that the study of Latin and Greek throws light on them at every step, making the acquisition of facts easier, the understanding of thought quicker and more clear. The best modern language masters now teaching in England have been trained on the classics. As for the average boy, if you but set him problems not beyond his powers, he not only enjoys his work, but his accuracy and clearness of thought can be seen improving week by week. The relations of subject and object, for example, so obscured in our language, and hardly less so in other modern languages, are unmistakable in Latin and Greek. I shall never forget an unconscious tribute paid by a boy of no great wit, who was a boarder in my own house, who, after wrestling for an hour with a piece of Latin, said with a triumphant smile, "Talk of concentration of mind! Give me Latin prose for that! if you stop thinking for a second you're done." And the more advanced student gets a notion of literary form from Latin elegiacs or a period of Cicero, which the study of English, German, or even French will not give him. French prose has grace, but it never approaches the dignity of Latin; to compare the wooden stilts of a German period to the strong march of the Latin is really absurd; and the English books which might help here, such as Milton's prose or North's, or the magniloquent Hooker, are not read at all by the modern boy.

But I need not enlarge on this; no unprejudiced mind will deny it. Yes, I shall be told, but that is no argument for adding Greek. But Greek has its own virtues; a grace and delicacy which are all its own, unsurpassed by any language that we know of. If we dispense with one, that one should not be Greek. For besides, the subject-matter of Greek is infinitely more interesting and stimulating than that of Latin. In Greek we have the beginnings, always so interesting to understand: the first epics and the greatest of all time, the first and greatest tragedy, comedy, philosophy, and in all essentials history also, the most perfect elegy and epigram; in short, the perfection and flower of all literature. Greek art and architecture were also supremely good. Moreover, the influence of both these nations has been so great on the modern world that it cannot be understood without studying both. The fact remains that the man of refinement, the scholar, historian, and philosopher, perhaps also the poet and creative artist, must go to Greece and Rome. And let no one imagine that the essence of these can be got from translations; they can only give the second best. Translations, in fact, are a branch of English literature, not of Greek or Roman.

Another point which gives special value to Latin and Greek scholarship is the limitation of the problems to be mastered. With modern languages, with archæology and antiquities, new facts are being continually discovered, new theories proposed to explain them. But the domain of Latin and Greek literature, although wide enough for prolonged study, and difficult enough to call into play all the literary powers, is limited. It is a field which has been carefully explored and mapped out; its problems can be clearly stated, and the conditions are constant; new discoveries are few, and fall naturally into their place; hence the mind, while exercised to the full, can set before itself as its goal a complete mastery of the subjects which it investigates. I do not say that everyone will attain this; few, indeed, even approach it; nevertheless, it is true that the mastery is possible, and that successive stages of complete mastery are also possible. This feeling of accomplishment gives a sense of power which we look for in vain elsewhere. The equally essential conviction of the infinity of knowledge and the zest for continued investigations can be fostered, not only by study of archæology, linguistics, or some other progressive branch of classical work, but by the numberless other subjects of human thought. Thus we see that the classics not only give examples of perfection in literary forms, and are therefore in themselves satisfying, but form an incomparable foundation for other work of an intellectual kind, except perhaps the abstract reasonings of mathematics.

Assuming now that the classics are indispensable to a liberal education, it being admitted that other things are also indispensable which are now omitted, how are we to find time for them all?

The answer is—by new-modelling the time-table and by improved methods.

(*a*) The former, as I have indicated, is a necessity, and there is no use in arguing the matter at length. Even if it should prove that scholarship suffer, for the average middle-class school that will have to be endured; and to some degree the schools which at present seem to be indifferent to outside opinion will have to follow suit. But it is by no means certain that in the end scholarship will suffer, as I shall endeavour to show. The new time-table, like the German and the American, will have to give room for study of the mother tongue; and as regards foreign languages, the principles will be (1) not too many at a time, and (2) sufficient time allowed for learning. An experiment has been tried in certain classical gymnasia in Germany whereby (1) the first foreign language was French, no other being learnt with it; (2) Latin begun next, and the two ran together: (3) Greek considerably postponed. At least one lesson a day must be given to each new language if any progress is to be made; in most public schools French and German, which are allowed two lessons a week, are ridiculous, as everyone knows. The details cannot be profitably discussed now; but it is found that when boys thus begin with French, take Latin at the age of, say, twelve, and Greek at, say, fourteen, by the time Greek is begun they are able to drop some of their French and so gain more time for classical languages.

(*b*) When we come to methods I shall probably be met with scepticism. I shall be told that the experience of centuries has evolved a method as near perfection as may be; that any attempt to change it will be risky, and cannot be better, but will probably be worse than that we have. Well, I can only point to results. Boys who have spent ten or twelve years almost wholly in the study of the classical tongues, at the end are often unable to write the simplest piece of composition without some grammatical blunder; the best of them are unready and could not compose a simple piece as fast as their hand can write. They have a great quantity of lore at their command if you give them time; they have gained much, no doubt, both in taste and knowledge; but I can only say that I have seen better results (with the exception of verse composition) attained by ordinary men after a three months' concentrated study in Russian, a language hardly less elaborate than Greek. Moreover, we have all known people who began classics late and yet attained to the highest distinction; the late Mr. R. A.

[1] Extracts from an address on "The Teaching of Classics" given in January, 1904, at the North of England Education Conference, Leeds.

Neil was one, and the same is true of most women students. I have also noticed, amongst pupils of my own, especially in men coming from certain schools of great scholarship-winning repute, a weakening of mental power and a loss of keenness when they begin University life which is less often seen in boys coming up from small schools, where the training is less exacting, and never seen in the late learner. My own experience—and again I would apologise by saying that we can be most useful in speaking of our own experience—goes to show that it is a distinct advantage to clever boys to begin late, and what I have seen in the case of those who learnt Russian goes to show that the average mind, when mature, and if properly taught, can make very rapid progress. In this latter case it was the method of teaching which made the difference, and the method was based on the spoken word.

Why do we so often forget that language is a thing spoken first and last, and that writing has nothing whatever to do with it? And what is there to hinder our speaking in Latin or Greek? Three hundred years ago, when schoolbooks were of a kind that excites modern ridicule, Latin, at least, was habitually spoken; the old grammars were no more than a *memoria technica* to help in systematising the forms and idioms which both teacher and learner knew well in practice. Samuel Pepys was no scholar, but he spoke Latin, and so did the Dutch fashionable ladies of his day, as he tells us. If I have not misunderstood him, his servant boy could speak Latin, too; at least, he used to read it aloud to his master. All through the golden age of scholarship Latin was spoken, and it is a curious coincidence, not remarked before, that the decadence of fine scholarship has followed not long after the practical extinction of spoken Latin. The pioneers of Greek also spoke it; they learnt it *viva voce* from Greek scholars. It is also apt to be forgotten that Greek was actually the ordinary medium of intercourse between Plato and Socrates, Xenophon and his soldiers. Greek and Latin can be spoken, then: if so, why not use oral methods in teaching? That is the secret of the success of the modern method of teaching modern languages, it was the method of Erasmus and of Busby; and we have done foolishly in dropping it.

I am not here to propound a ready-made system of language teaching. I have made modest experiments with boys of all ages for fifteen years, and during the last two years have been, with the able assistance of my friend, Mr. W. H. S. Jones, trying to arrange a practical and comprehensive scheme for a school. But I am still in the stage of experiment, and it must be years before results begin to be appreciable. I may say, however, that a very short experience convinced me that a large amount of knowledge can be conveyed by this method, whilst in quickness and readiness the results are surprising. Boys of eleven or twelve, in their second year of Latin, are found to have mastered the *Oratio Obliqua* so as to produce a set of exercises almost wholly correct, a thing which I never saw in all my previous experience. They are also able to express simple thoughts with fair coherency in question and answer. Let me guard against a misconception, however. Oral work is only one of several methods; reading and writing are as indispensable as ever, but the writing is made secondary, and that is as a means of testing the accuracy of the speaking. When these boys move on to the higher forms they will of course need more writing and less speaking; but the quickness of mind remains. And here let me quote a dictum from the "American Business Man's Letters to his Son": "Does a college education pay? You bet it does. Anything which makes you worry out the answer to a question while the other fellow is nibbling the end of his pencil pays." If the oral method makes the mind quick, it must be a valuable help *in practical life.*

THE SUPERSESSION OF COMPETITIVE EXAMINATIONS.[1]

The new method of selection of boys for entry at Osborne College as Naval Cadets sanctioned by the Earl of Selborne, First Lord of the Admiralty, is of especial interest to schoolmasters. The following extracts from Government papers dealing with the procedure adopted and its results will prove of value in demonstrating that alternatives to competitive examination can be found.

In a prefatory memorandum Prof. Ewing, F.R.S., the Director of Naval Education, explains that, as an aid in selecting boys for entry to the college at Osborne, the First Lord appointed a small committee to see the candidates individually, and to put them through a very informal examination or inspection. This committee classified the boys according to its impression of their brightness and general suitability, and reported the classification to the First Lord, who then proceeded to make his nominations. The nominated candidates were next examined medically, and were finally subjected to a written examination on school subjects, conducted by the Oxford and Cambridge Schools Examination Board. This written examination was designed to be purely qualifying and not competitive, its object being to test whether the nominated candidates came up to a reasonable standard in the ordinary school work taken by boys of their age.

To aid the Interview Committee in the work of classifying candidates the following particulars were furnished to it:—

(1) Information supplied by the parents when applying for nomination.

(2) Medical history sheet signed by the parent and by the family doctor.

(3) Schoolmaster's reports. These were confidential answers to questions relating to the boy's ability, predilections, and conduct at school.

This general procedure has been followed on the two occasions when entries have as yet taken place, and the results were so satisfactory that it will be continued.

The first committee met in June, 1903, and sat for eleven days, seeing 279 candidates. Admiral Sir John Fisher, Second Naval Lord, presided, and the other members were: Mr. C. J. Ashford, Headmaster of the Royal Naval College, Osborne; Commander E. Hyde Parker, R.N., of the "Britannia," and Mr. V. W. Baddeley, one of the First Lord's private secretaries. The second committee met in November, 1903, and sat for eight days, seeing 151 candidates. It consisted of Rear-Admiral Durnford, Junior Naval Lord, as President; Dr. James Gow, Headmaster of Westminster School; Captain Trevylyan Napier, R.N., and Mr. Baddeley.

With few exceptions the nominated boys passed the qualifying examination. It appears, however, that the nature and intention of this examination are occasionally misunderstood, and that some parents make the mistake of supposing that the services of a "crammer" are necessary or desirable. It cannot be too plainly intimated to the parents of boys who are presented under the new scheme that the Admiralty do not want candidates who have been specially prepared to pass an examination. They want boys who have had the advantage of natural mental and physical development under the usual conditions at a good preparatory school. To take away the boy from such a school and subject him to special tuition is a course to

[1] "New Scheme of Naval Training. Selection of Candidates for Nomination as Naval Cadets. Reports of Members of the Interview Committees." (Eyre & Spottiswoode). [Cd. 1962.] 1½d. "New Scheme for Entry of Naval Cadets who are Candidates for Commissions as Executive and Engineer Officers of the Navy and Officers of the Royal Marines."

emphatically deprecated. Up to the time of entry at Osborne, it is on every ground desirable that there should be no distinction between the school work of the Navy candidate and that of the boy who means to go on to a public school.

The Board of Admiralty has decided that in July, 1904, the qualifying examination will be in the following subjects:—

(1) English (including writing from dictation, simple composition and reproduction of the gist of a short passage twice read aloud to the candidates.)

(2) History and geography, with special reference to the British Empire.

(3) Arithmetic and algebra (to simple equations.) N.B.—Two-thirds of this paper will be in arithmetic.

(4) Geometry (to include the subject-matter of Euclid, Book I., or its equivalent, with simple mensuration. The use of instruments is allowed.)

(5) French or German with an oral examination, to which importance will be attached.

(6) Latin (easy passages for translation from Latin into English and from English into Latin, and simple grammatical questions.)

The only option retained is that between German and French. Each boy will take all six papers, but it is not required that he should reach any specific standard in each.

From the report of the President of the First Committee we quote the following remarks:—The following system of inquiry was adopted. Careful means having been adopted to prevent any possibility of communication between the candidates; each of them appeared separately before the committee with a short written statement (for which he was allowed about ten minutes) on some popular subject. Alternative subjects were offered in each case. This tested the handwriting, spelling, and general knowledge of the candidate and his power of expressing himself clearly. As an instance, one little boy of 11¾ years of age was asked to state what he thought were the chief duties of a naval officer. He replied:—"First, to serve his king and country. Second, to be the last person to leave his ship, if wrecked. Third, to obey his superior officer."

The subjects for the written statement were frequently changed—always twice a day and sometimes oftener—and it is considered to have been impossible under the procedure adopted for the candidates to have had any inkling of the subject of the written statement or of the examiners' questions. The examiners then, each in turn (and not always in the same order), invited the candidate to show his general knowledge and intelligence by a variety of simple questions on all kinds of subjects.

The committee were greatly assisted in framing their judgment as to the fitness of the candidates for the Navy by the medical history sheet and the schoolmasters' replies to specific questions put to them respecting each candidate.

The committee, having deliberated on each candidate's qualifications (on his leaving the examination room), placed him in one of three categories—α. Fit. β. Doubtful, though promising. γ. Unsuitable. Each of these classes were subdivided into three (α+, α, α−, &c.), as it was found easy to classify the boys as closely as this. The taking of the votes of the members of Committee, as well as the order of their interview with the candidate, varied with each candidate. It is interesting to note that there was very seldom a divergence of opinion in the classification of the candidate—more especially as regarded γ!

The committee having interviewed all the 279 candidates who presented themselves, expressed their unanimous and very decided opinion that the First Lord could not have devised a more satisfactory or more efficacious scheme of sifting the candidates, because it involved such an inquiry into all the points of fitness for the Navy as no form of the stereotyped competitive examination admits of.

Commander Hyde Parker remarks: I have not found much difficulty in classing the boys, except some of the youngest, as to whom I have had some hesitation on account of the difficulty of determining correctly how much difference in general knowledge should fairly be allowed for any given difference of age. This must always be a difficulty, and for this reason I consider that *absolutely* correct comparisons between boy and boy can only be obtained amongst boys of nearly equal age. At the low age of 11¼ to 12½, a small difference of age makes a very great difference in knowledge and self-possession. At this period the formation of ideas, the faculty of deducing definite conclusions from known facts, the powers of description, classification, and composition, together with much else of the mind's educational expansion, are advancing at high speed, and consequently a few months make a great difference. Such difficulties as I have found have been in this difference of age, and I think, therefore, a narrowing of the limits would help future committees, though other reasons for broader limits may have greater importance. I do not think shyness or nervousness has handicapped the boys much; perhaps in a few cases it has a little, but I think we have quickly been able to put the boys at their ease. What may have appeared rather ridiculous questions were put with this in view, in order to bring about a laugh, which often was all that was required. I think the method of examination has been a very fair one to the boys, and in the few cases where an examiner has had personal knowledge of a candidate, and might therefore be biased, he has refrained from an expression of opinion in the final assessment of merit. I consider this method preferable to open or even limited competition. With competition cramming to an extent dangerous to the brain and physique becomes inevitable, and would probably be exercised at as early an age as eight or nine, carrying with it far-reaching evils.

Mr. C. E. Ashford reports: The school reports were unexpectedly valuable. The majority of masters seemed to have been actuated merely by the desire of helping the First Lord to make a good selection—not to get in their own boy. I do not think that masters have lost by frankness, as their reports, when favourable, carried greater weight from their known truthfulness; and in one or two cases the committee were very greatly helped by this private information on points which would not appear in an interview or qualifying examination.

The medical reports were of great use in some cases where the evidence was not sufficient to throw out the candidate on the medical examination, but where some inherited or other weakness would militate to some extent against his usefulness; this could then receive weight in allotting him a class.

I have formed the opinion very strongly that an interview is perfectly fair in the case of the older boys, say, those from 12¼ to 12¾, but that a decision was much more difficult in the case of the younger boys from 11¾ to 12¼. This is caused partly by the lack of subjects of interest on which to reach them, but chiefly by their irregularity of development, which is undoubtedly more marked at the younger age.

From reports by the members of the second committee the following extracts serve to show the general belief in the new method. Capt. Napier says: The system I consider good, and achieves the object aimed at. This system is not infallible, but having regard to the requirements of Naval Officers, it seems more likely to be successful than any other. My impression is that the boys' scholarly attainments should be such as to render it probable that they will be able to pass the qualifying examination—and that the qualifying standard should be such that any ordinary boy with decent education could satisfy it—and *primarily* it should be such that no special education or "Navy

Class" system should be necessary. Latin, being now a voluntary subject, has in some cases been discontinued by boys when it was decided they were to try for the Navy. If this is done, and the boy does not after all receive a nomination, it is upsetting to his education in general. Latin should be compulsory.

I gather from outside information that there appears to be an idea amongst the parents of the most desirable class of boys that the chances of their boys succeeding in getting a nomination are small, and they therefore hesitate — often on the schoolmaster's advice—to prepare their boys for the Navy. But no special preparation *should* be necessary.

Dr. Gow reports that: In conducting my own inquiries I had in my mind a normal standard of attainment for a boy of about 12½ years attending a good preparatory school, and I tried to ascertain whether the schoolwork of each candidate was of this standard or above or below it, and whether he was doing his work intelligently and to good purpose. Regard was paid, of course, to his actual age and also to his avowed predilections, and I allowed a defect in one subject to be counterbalanced by superior merit in another. It may be of service on a future occasion if I state what my standard was in each of the chief subjects of instruction. In *Latin* I expected a boy of 12½ to be reading Cæsar, and to be able to translate into Latin short compound sentences of every type. In *French* I expected some easy French story and short compound sentences involving the commoner irregular verbs. In *algebra* I expected problems leading to simple equations. In *geometry* I expected Euclid I. (1-32), or an equivalent portion of some modern substitute for Euclid. I did not ask questions in arithmetic or geography or history, except where boys expressed a preference for these subjects and were not good at the others.

I was greatly interested in the examination, it never grew tedious to me, and I believe it to be a thoroughly good and just method of selection. The great merit lies in this, that, the examiners being all present together, each of them not only applies his own tests but watches those of his colleagues. Thus every boy was carefully considered from many points of view and was judged on his merits as a whole. A board of three or four men, of different antecedents and almost strangers to one another, constitutes a kind of publicity in which deliberate injustice is impossible.

I will conclude with such criticisms of the examination as my experience of it and of boys in general suggests. About ten candidates only did not offer Latin, but these did not show any superiority in the subjects which they had substituted for Latin. There is, therefore, strong reason for believing that they dropped Latin because they were boys of inferior ability. As there is no lack of candidates, I suggest that Latin should be made compulsory, and I also suggest that Greek should be allowed as an option in the qualifying examination. Secondly, I think that boys should not be presented for examination earlier than is necessary, unless their schoolmasters vouch that they are of superior ability. Six months' work and growth make great difference to a boy of 12, and it is not fair to submit him to tests which may be properly applied to a boy of 12½. Also, the less a boy knows the more difficult it is to apply to him any satisfactory tests at all. The examiners felt this difficulty keenly, and put back many of the younger boys on the ground that they were unable as yet to do justice to them. Thirdly, I suggest that, after the first morning of the examination, the examiners should consult together and criticise one another's questions. In the last examination we were quickly *en rapport* with one another, but it might not always be so. I am convinced that our examination selected a great number of hearty, vigorous, clever boys, whom any school would be proud to possess.

POINTS OF VIEW.

Probably at no time in the history of our country has there been a greater demand upon the intellectual powers than there is to-day. Keen competition and rivalry characterise the existing relations between communities and nations. Prof. Huxley some years ago pointed out, with regard to our industries, that we were in the presence of a new struggle for existence; and more recently Sir Norman Lockyer, in his address to the British Association last year, goes further, and declares that the scientific spirit, the brain power, must not be limited to the workshop when other nations utilise it in all branches of their administration, and he declared that universities and other teaching centres are as important as battleships and big battalions, and are, in fact, essential parts of a modern State's machinery.—The Prince of Wales at the Battersea Polytechnic.

We believe that the State owes every boy and every girl born within its jurisdiction an education at the State's expense up to the point where they can earn their own living. We believe that the money spent in the education of the children is the money that is best spent anywhere. Just think of it; we have fifteen millions of them at school over there—fifteen millions—and these boys and girls are the coming men and women in whose hands the destiny of our Republic in the future will lie. As our Government is constituted, it is a natural necessity that every boy should receive an education up to the point I have stated; our liberal institutions could be safe on no other basis than that. Well, so it is that we are very enthusiastic upon the subject of education. We are very inquisitive upon the subject of education. You have heard of the Yankees (have you not?) always asking questions; and we keep our eyes and ears open to see what is going on in every other country on the face of the earth in the matter of education; and no new ideas escape us, whether they emanate from England, or Germany, or France, or any other nation.—The Hon. J. H. Choate, American Ambassador, at presentation of certificates to county scholars by the London County Council.

When you think of the great discoveries of Faraday in England and of Henry in America, and the succession of workers from their time to the present day who have added so much to our knowledge, you cannot help being struck with the enormous progress which science has made within a comparatively short period; and, perhaps, that progress has been even more remarkable and striking at the beginning of the twentieth century than during the whole of the nineteenth century. Many of these discoveries were for the moment in the realm of pure science, presenting no prospect of practical application; but what is to be thought of a scientific investigator who only looks for an immediate practical application of the results of his labours? The electrical discoveries of Faraday and Henry would never have been made if those great men had contented themselves with asking *Cui bono?* who will benefit by them? The every-day workman would be all the happier for knowing something of the laws of nature developed in the work he is called upon to perform. The habit of mind of thinking scientifically, and bringing scientific knowledge to bear on the practical work of life, not only contributes to the work being well done, but also to the richness and mental wealth of the work.—Lord Kelvin at the Northampton Institute.

Five hundred years ago the Oxford students lived in lodgings, but William of Durham and Walter de Merton were followed by many other wise founders of halls and colleges, and now the Oxford colleges are far more important in education than the university. And that culture of which all Oxford men are so

proud, a culture which has distinguished Oxford for centuries, is not due to university teaching, is not due to any kind of forced training, but it is due to the companionship of students following various courses of study, with that intimacy of life which enables young men to make close friendships which may last till they die, to take fire each with the others through noble ideals; to that college life which enables youths to see great scholars every day, to see men worthy of worship knowing that they also are students. Only for this, there would almost be no education given at Oxford, for of university professors and lecture-rooms and laboratories, of any kind of university life, there is not much to be found there. Oxford is, however, making headway, and may yet overtake London in her university teaching; she is beginning also to see perhaps more clearly than London that it is through research, not post-graduate research merely, but the research of every student from the beginning, that true progress is made.—Prof. JOHN PERRY, F.R.S., at the twentieth anniversary of the opening of College Hall, London.

IT is a special characteristic of London that it always remains an unexplored and unknown territory, even to its oldest inhabitants. Half the opportunities and advantages of London go unused from sheer ignorance of Londoners as to what is open to them. This is especially true of education. Neither parents nor students—not even the schoolmasters themselves—have any adequate idea of what schools and colleges, institutes and classes already exist; what are their relative advantages; what subjects are taught, at what hours, and at what fees; what scholarships are offered and where the proper preparation for each occupation can be obtained. In addition to the *Monthly Gazette* of the Education Committee, we sadly need an A.B.C. Guide to all public education in London—a comprehensive plain handbook, prepared from the standpoint of the would-be student or his advisers, rather than from that of particular governing bodies. Such an "Educational A.B.C.," if published annually by the County Council at a nominal price, would do much to open up opportunities at present only partially used. The unification of London's education is the psychological moment for this new departure. The modern municipality can no more dispense with advertising than can the soap man.—Fabian Tract, No. 117. "The London Education Act, 1903: How to make the best of it."

HISTORY AND CURRENT EVENTS.

THE war between Russia and Japan is, of course, a matter of interest to every one. To those who, in addition to the practical aspects of the contest, regard it from the world-historical point of view, it suggests many thoughts. And first, we are reminded of the Polish and other "Eastern" questions of the eighteenth century. Then, Russia wishing to push westward found three States on her boundary—Poland, Sweden and Turkey. Sweden saved herself by a monarchical revolution from impending ruin, and lived to win Norway, though to lose Finland to Russia. Poland failed to save herself and perished in three partitions, the greater part going to Russia. Turkey has lived on, diminished in size, owing to the jealousies of the Christian Powers. Is there any parallel between Poland, Sweden, Turkey and Korea, Japan, China? Sweden was Russia's enemy, but did not intervene to save Poland. Japan seems now to be doing for Korea what might have been done for Poland by Austria and Prussia if they had not been so jealous one of another.

THE war is interesting, secondly, as a curious illustration of the relations between belligerents and neutrals. Quite apart from the question of contraband at sea, what is the position respectively of Korea and China? Korea is neutral, and Japan has guaranteed her independence by a new treaty. Yet both belligerents use her territory, and battles will probably be fought on the boundary between Korea and Manchuria. What, again, is Manchuria? Legally an integral part of China, which is neutral. Yet while both belligerents regard China as neutral, Manchuria and the occupation thereof is the *casus belli*, and both Japan and Russia have troops there. Turkey declared war on Russia in 1770 because of Russia's treatment of Poland, the *occasion* being the burning of a Turkish village just across the frontier. How far towards Pekin may Russian or Japanese troops *not* go to avoid a breach of Chinese neutrality? And would Chinese intervention lead to a partition, as Turkish intervention did in 1772?

HOW does Russia regard the war? There has been talk of Russian retreat inland, drawing the Japanse after them until they should be overwhelmed as Napoleon was in 1811-12. Again, we have heard that Russia is so big that the war is not really an important matter for her. And, indeed, if we remember the fate of all attempts to check the advance of Russia towards the sea, there is something to be said for this point of view. The European powers in the eighteenth century did not hinder her reaching and largely controlling the Baltic; the Crimean War failed to close the Black Sea to her fleets. Persia is gradually coming under her commercial supremacy. Will Japan finally hinder her attaining an ice-free port in the Pacific? We have been learning from Sir W. Hunter's fragment of Indian history that, from the Great Mogul's point of view, our desperate struggles to establish trade in Bengal in the seventeenth century were of the very slightest importance. These local "riots" were scarcely worth recording in the annals of the Mohammedan Indian Empire. Is it the same now for Russia and her opponent Japan?

BUT we remember that the power of the Mogul was even then, in the end of the seventeenth century, at the beginning of its decline. Before fifty years had passed it was evidently helpless. And this reminds us, if reminder were necessary, that it is still doubtful if Russia is not big rather than great. She has grown enormously during the last century, but so too have the signs of internal discontent. She cannot save her vast populations from the effects of occasional famine. She alternates between policies of repression and of reform. And some of the *zemstoos* are looking forward to the opportunity of Imperial distress to push their claims to be consulted more than formerly. Which way is the internal development of Russia tending? To a really national government or to disruption? We remember that it was to the French wars of our own mediaeval monarchs that England partly owes the powers of the House of Commons. But then England is a small country, and consequently we have advanced so far that our Foreign Secretary welcomes popular demonstrations to strengthen the hands of the Government for action, say, in Macedonia.

THE governing body of the South Western Polytechnic, Chelsea, has unanimously appointed Mr. Sydney Skinner, M.A., of Christ's College, Cambridge, to the position of principal in succession to Mr. Herbert Tomlinson, F.R.S., who is retiring. Since 1888 Mr. Skinner has been attached to the teaching staff of the Cavendish Laboratory at Cambridge, and also has acted as director of natural science studies at Clare College. He is a secretary of the Cambridge Philosophical Society, and has been appointed one of the organising local secretaries in connection with the British Association visit to Cambridge, 1904. Mr. Skinner will take up his duties at the Polytechnic about the beginning of May next.

ITEMS OF INTEREST.

GENERAL.

In view of the importance of the scholarship question to local education authorities who are now attempting, in accordance with the Education Act of 1902, to co-ordinate education in their various areas, the articles on this subject published in the present issue should be of particular value and interest. We have been able to secure the co-operation of practical schoolmasters of experience, who are in a position to speak with authority, and the question of scholarships is considered by them from the point of view of the requirements of various types of schools—from the elementary school to the university college. This demand upon our space has necessitated the postponement of several important articles we had hoped to publish this month, including a discussion of the question of the training of teachers for London by Prof. J. W. Adamson, a description of the courses for the training of secondary-school teachers at the University of Birmingham, and an account of the National Society of French Teachers in England.

A memorial to the Board of Education, signed by a large number of influential educationists and men of science, directed the attention of the Board to the omission of educational experts in the constitution of the new Education Committee for London, sanctioned by the London County Council, as was described in our issue of last month. The memorial pointed out that there were "certain defects in the scheme which must seriously impair the efficiency of the committee in its work of co-ordinating and developing all varieties of education in London." After detailing the work, the new committee will be called upon to deal with, the memorial urged that under the proposed scheme there was no guarantee that the Council would have at its disposal any sufficient number of persons of experience in education and acquainted with the needs of the various kinds of schools in London. The Board of Education was therefore asked to consider "the desirability of amending the scheme so that the Education Committee may include persons who would be universally recognised as authorities on the needs of the University, the technical institutes, and the elementary and secondary schools." *The Times*, *Pall Mall Gazette*, and other leading papers gave their support to the memorial, but the Progressive members of the Council were strongly in favour of the adoption of the scheme as submitted to the Board of Education. Their view is that, if the Council is to be responsible for the administration of education in London, its action should not be interfered with by outside influence.

The Board of Education has approved the draft scheme for an Education Committee submitted by the London County Council on January 27th last. The letter from the Board of Education states: "In expressing their approval the Board must not be understood to accede without regret to the desire of your Council to limit the Committee so closely to members of their own body. But the Board recognise that the conditions of London are essentially different from those of other local authorities; while the task which the London Education Act has imposed upon the London County Council involves duties so grave in their importance and so varied in their character, that the Board are unwilling to press for modifications in a scheme framed by your Council with these considerations in view, and constituting such a Committee as they think will best assist them in the fulfilment of these duties." We regret the conclusion. We can only hope now that the Education Committee will take every opportunity of consulting expert educational opinion before deciding the many highly complex questions of secondary and higher education which will c before it for consideration. The provisions of the Lon Education Act supply an excellent opportunity for the ordination and completion of the educational system of Lon and it is earnestly to be hoped that the new Education C mittee will seize the opportunity and accomplish for Lond educational needs similar services to those the London Co Council has effected in other directions.

The Royal Society recently addressed a letter to the vari university authorities directing attention to a resolution adop by the council of the society, and enclosing a statement re sentative of a large body of scientific opinion on the subjec instruction in methods of science in secondary schools. resolution is as follows: "That the universities be respectf urged to consider the desirability of taking such steps in res of their regulations as will, as far as possible, ensure th knowledge of science is recognised in schools and elsewhe an essential part of general education." The statement po out that, notwithstanding efforts extending over more than h century, it still remains substantially true that the public sch have devised for themselves no adequate way of assimilating their system of education the principles and methods of scie

A vacation course in geography, similar to that of Au 1902, will be held at the School of Geography, Ox during the first sixteen days of August, 1904, provided th sufficient number of students send in their names to the Cur School of Geography, Oxford, by June 1st. It is propose have courses of lectures, probably on the British Isles an the principles of geography applied to education, and in s tion to have classes for practical work both in and ou doors. A number of excursions will be arranged. The will be three guineas, and this will include the use of appa for the practical classes. A provisional programme will be in May to all who forward a stamped addressed envelop the Curator, School of Geography, Broad Street, Oxford.

During the debate on the training of teachers in the H of Commons on March 15th, Sir William Anson annou that whereas, as the regulations for pupil teachers now st the boy or girl at a preparatory class receives £2 a year for years, he will hereafter receive £4 a year for two years. meaning of a preparatory class extends to a secondary schoo receiving the A or B grant under the secondary school r lations of the Board of Education. The boy or girl at a re nised pupil-teacher centre who now receives £3 a year wi future receive £6 a year. In thus doubling their grants pupil teachers, the Board of Education hopes to relieve in s measure the charge thrown upon local authorities by the pupil-teacher regulations.

In reply to a question in the House of Commons by Gray, asking why the Board of Education has reduced the v of national scholarships in science from 30s. to 25s. per week, whether, having regard to the desirability of keeping these sch ships open to students unable to supplement them by pr means, he would advise the Board to reconsider their deci Sir William Anson said the Board believes "that the amou the scholarships is sufficient to attract good candidates, and in the majority of cases they provide an adequate supplemen the other resources of the students, and they consider that in cases where more is needed the assistance should be pro under the supervision of local authorities rather than from f administered by the Board. The students who gain scholarships have, as a rule, been for a period of years u the direct observation of local school authorities, who necessarily possess, or can readily obtain, a more intimate k

he circumstances of each student than can the Board. arships now provided by local authorities offer in es the further assistance required." But it is an open few if any national scholars are assisted by local in the way Sir William Anson suggests. Meanwhile ie best energy of these students has to be devoted to task of making both ends meet, instead of being upied by scientific study. The wisdom of such as this of the Board of Education may well be

ess delivered by Prof. J. Perry on the occasion of eth anniversary of the opening of College Hall, irects attention to the importance of corporate life in cation and the needs of the metropolis as regards halls or colleges for men and women. Though London colleges have hostels connected with them, iber of the students live in lodgings, and thus lose the mpanionship of student life which is an essential liberal education. A university without residential uich students following various courses of study meet a university only in name. Lectures and laboratory repare candidates for examinations, but more im- culture than the words or work of the wisest s the college where the student watches the scholar s inspiration from him. College Hall, founded by yer and her friends twenty years ago for women epresents the type of institution required in London. worthy object could be found than the establishment t of similar residential halls, and the generous bene- came forward to supply the need will rank with founded the colleges of Oxford and Cambridge go.

lian Government has issued the text of a resolution th Lord Curzon's scheme for the reform of Indian After an exhaustive history of the subject, the t states that the existing methods require sweeping id go on to announce that competitive examinations blic services will be replaced by the selection of on probation. "Examinations," it is added, "have lominated the education system." The Government it primary education has been neglected, while education has increased in a striking manner. The riculum will be raised generally, the Government serving colleges. Teachers will be specially trained, lucation Department will be given four extra officers he present directors. Questions relating to com- chnical, artistic, and agricultural training are fully a the resolution.

e received a copy of the report of the twentieth year's e Incorporated Association of Assistant-mistresses in ondary Schools and of the twentieth annual meeting uary, 1904. The report is a record of the excellent e Association during 1903, and should be studied by ant-mistress in secondary schools for girls. Not only ssociation direct attention to administrative matters in but it arranges for the discussion of methods of nd other questions of direct value to the assistant- her actual class-room work. The new secretary of iation is Miss H. E. Macklin, 43, York Street Bryanston Square, London, W.

ISTRESSES of secondary schools in the north of ave long felt a difficulty in recommending their pupils teachers of domestic economy, owing to the fact that isting training schools of this kind in London are in or S.E. districts, and consequently too far from their pupils' homes to allow of their living at home during their training. This difficulty will, it is reported in the *London Technical Education Gazette*, be removed next autumn by the opening of a training school in the Northern Polytechnic, Holloway Road, N. The training school will be aided by a grant from the London County Council, and the L.C.C. training scholarships for domestic economy teachers will be tenable at this school.

A VERY attractive programme has been arranged by the Foreign Students' Committee of the University of Grenoble for the special courses in the French language to be held during the four months beginning July 1st, 1904. During the summer of 1903 the lectures were attended by 350 foreign students. The lectures cover a wide variety of subjects, beginning with grammar, elementary exercises in literature, translations, and leading up to the highest instruction in the literature, in general history, in the history of art, and in the political and social organisation of France. Persons desiring further information are invited to address: Monsieur le Président du Comité de Patronage, 4, place de la Constitution, Grenoble, who will be glad to answer all questions addressed to him.

IN connection with the recent Royal visit to the Battersea Polytechnic, a well illustrated record of the work of the institution for the ten years, 1894-1904, was drawn up by the Principal, Mr. Sidney H. Wells. The governors and principal of this enterprising Polytechnic have every reason to be satisfied with the work accomplished in this decade.

WE are requested to state, in connection with the second International Congress for the Development of the Teaching of Drawing to be held at Berne this year, that the date of entry for Exhibition has been extended till May 31st. Entries must be sent to M. Leon Genoud, president of the organisation committee, and the entrance fee to M. Oscar Blom, director of the Industrial Museum, Berne. Miss Ethel M. Spiller, 11, Highbury Crescent, London, N., has undertaken, if desired, to forward application forms and to give further particulars.

IT has been decided, upon the invitation of the City Council and the authorities of the Royal Albert Memorial College, to hold the Cambridge Summer Meeting of 1904 at Exeter. It will take place from July 29th to August 23rd inclusive, and will be divided into two parts. The proposed subject of study will be "The Age of Elizabeth," which has various interesting and important associations with Devonshire and the West of England; but there will also be three additional departments which will be found in practical treatment to lend themselves admirably to local illustration. These will be (1) The history of the British Navy. (2) Scientific section with botany, geology, and meteorology. (3) Antiquarian and literary associations of the South-West. It is also proposed to provide theological courses as in previous years, and special courses suitable for foreign students. A section on social and educational subjects has also been arranged. In connection therewith there will be several practical classes for primary and secondary teachers. Full particulars can be obtained from the Rev. D. H. S. Cranage, Syndicate Buildings, Cambridge.

A NEW Roman Catholic residential training college for women students is to be established in Southampton. The college is expected to be ready for the reception of King's Scholars next September; it has already been recognised by the Board of Education for the accommodation of sixty students. It will be under the direction of the Sisters of "La Sainte-Union des Sacrés Cœurs." A pupil teachers' centre will be conducted in connection with the college.

The Liverpool Secondary Education Sub-Committee has selected Mr. Weisse, headmaster of Rugby Lower School, to succeed Mr. W. C. Fletcher, as headmaster of the Liverpool Institute.

Mr. H. A. Garratt, head of the engineering department at the Northern Polytechnic, has been appointed principal of the Poplar Technical Institute.

We have received from the Director of Education for the Transvaal, Mr. Fabian Ware, a copy of the new regulations in regard to Government secondary schools.

Mr. Swami Raghunath Puri, of Durbar High School, Jodhpur, Marwar, India, writes to call our attention to the incomplete statement of the construction of Euclid I. 24, and proposes to amend it by the addition of the words, "and on the same side of EC as A is."

We have received a copy of a pamphlet by Mr. R. T. Williamson entitled "Neurosis and Education," which contains an abstract reprinted from the *Medical Chronicle*, December, 1903, of an address given to the Psychological Society in Berlin by Prof. H. Oppenheim. The brochure is full of practical hints to teachers.

Messrs. A. and C. Black have published a sixpenny edition of Prof. Percy Gardner's "Jowett" lectures delivered in London in 1901, the subject being "A Historic View of the New Testament."

SCOTTISH.

The annual report of the Carnegie Trust, which has just been issued, gives interesting information regarding the work of the Trust in the endowment of post-graduate research, and in the allocation of grants to the universities. For the fellowships, scholarships and grants offered under last year's scheme, 156 applications were received. Appointments were made to five fellowships and to fifteen scholarships, and grants of varying amounts were assigned to fifty applicants. For fellowships, evidence was demanded in all cases of research already performed and published; and for the scholarships, preference was given to candidates who could show evidence of experience and training in methods of research. In regard to grants, the committee laid down the principle that these should not include personal expenses of applicants or payment for assistance in any work. There can be no doubt that this is one of the most valuable departments of the Trust's operations, and general satisfaction is felt at the admirable beginning that has been made. For the purpose of facilitating research on the part of the Carnegie fellows and scholars, the Trust has purchased for £10,000 the laboratory of the Royal College of Physicians, Edinburgh.

In regard to the second part of the Trust's operations—the payment of class fees—little discretion is left to the trustees, and there is no scope for the development of a policy. Yet the statistics in the report show how strongly this part of the scheme appeals to the majority of Scottish students. The total expenditure for the year ending December, 1903, was £44,080, representing the class fees of 4,782 students. Compared with previous years, there is an increase all round—in the amount of fees paid, in the number of beneficiaries, and in the average fee paid per beneficiary. As the fee-paying income of the Fund has now almost reached its limit, the Trustees have taken steps to lessen the demands upon it by (1) restricting the number of classes to those required by the ordinance regulating the curriculum of the student; (2) raising the standard of preliminary education in the case of medical beneficiaries to that req arts and science. The immediate effect of this will be considerably the amount of fees paid for medical classe will tend to raise the standard of general culture among medical students. To meet possible cases of hardshi the more stringent requirements, the Trustees are w accept, instead of the arts or science preliminary exan the medical preliminary examination plus a qualifying cu of study in the four subjects of the first professional nation.

The Scottish Education Department has issued a ci training colleges and local committees for King's student that they are instituting an examination with a viev recognition af qualified teachers of modern languag examination will be open to students in training coll King's students and to certificated teachers. Candic recognition must have attended an approved course of in in the language proposed, and a record of their work forwarded to the Department. The examination will c two parts—the written examination and the oral—and tion will only be given to candidates who pass in bot standard for the written examination will be considerab than that for the higher-grade leaving certificate. examination will be conducted at suitable centres th the country by examiners appointed by the Departme general character of the oral test will be as follows: candidate will be required to read aloud one or more pa prose or verse to test (*a*) correct vowel enunciation, (*b* tuation, (*c*) fluency and grouping of words naturally; examiner will read passages of prose or poetry at vary of fluency, to test if candidates have followed the gene of what has been read; (3) the examiner will test the c by conversation on some simple topic; (4) an exercise tion may be set.

Prof. Darroch, of Edinburgh University, at a m the Educational Institute (Edinburgh Branch) deliv address on "The Ends and Limits of the State in r Education." Within recent years, he said, the State far beyond its proper function and had usurped the duti local authorities and the teachers. The latter have con regarded merely as media for the transmission of ed energy generated by the central body. The true functi State was to see to the provision of the means of educati co-ordination of those means, to the efficiency of the ins and to the adequate supply of the instructors. It was the of the local authorities, in consultation with the tea determine the ends at which education should aim, as w best means and methods for realising those ends. All t ever, has been swept into the grasp of the educational o the central authority—and the duties of the local autho almost wholly confined to the fulfilment of its decree Darroch pleaded for strong local authorities, which can secured by enlarged areas, and he considered that th councils would be much more effective bodies than an authority that might be set up.

IRISH.

The Consultative Committee, representative of Irish appointed to confer with the Department with referen extended programme and regulations for science and ar tion, was summoned to meet the officials at the offic Department on March 4th, when the revised progr experimental science, drawing, manual instruction and economy in secondary schools for 1904-5 was under c tion. Besides the heads of the leading schools, repres

llowing associations also attended: the Catholic Head-Association, the Schoolmasters' Association, the Christhen' Schools, the Dublin Branch of the Teachers' ie Ulster Schoolmistresses' Associaton, and the Central on of Irish Schoolmistresses. The representative of ent Schools' Committee was unfortunately prevented nding.

inual report has been published of the Department of re and Technical Instruction for 1902-3. From the n under the heading of the Parliamentary vote, it is the amount spent on the Science and Art Instruction ; increased from £10,900 in 1901-2 to £18,000 in hile it is estimated that it will increase to £32,500 in The increase is a clear proof of the satisfactory exten-ictical science teaching in intermediate schools. This ain in the larger number of schools adopting the nt's programme; the number in 1901-2 was 154, and 196. In addition to the above-mentioned sum, the tary vote included £11,037 for the Royal College of 12,246 for the Museum of Science and Art, £4,069 tional Library, £4,381 for the Metropolitan School of ,4,022 for the Royal Botanic Gardens. The Depart-nother source of income, viz., the Endowment Fund, of an annuity of £171,000, and of this £55,000 is technical instruction proper under the local authori-00 for the county boroughs, and £29,000 for the rest ntry. Under this heading it is satisfactory to note : county boroughs have schemes in operation, and the f 33 urban districts and 30 counties have either ved or are under consideration. There is no doubt, is to the interest now being taken throughout the technical work. It is too early yet to be looking for ults, but there need be no apprehension that in various will result.

can be little surprise, therefore, at the stir made in out the proposal to withdraw the so-called equivalent 3,500 at the end of the present financial year, *i.e.*, in 04. Deputations to Mr. Wyndham had received ic replies, but the issue of the Parliamentary debate accordance with Irish wishes, although the Treasury ave a show of reason on its side. The only rational of the debate seems to be that the theory of equivalent educational purposes practically has broken down so erns Ireland, for the equivalent of money granted in r an educational purpose seems never to be used for ducational purpose in Ireland, and sometimes not for l purposes at all. For example, the first claim upon nt of £185,000 is to be for land purchase, and the , apparently, will be for motor transit; not because is not crying out for money, but, apparently, because orities will not take the trouble to learn the truth as ucation.

,500 is apparently not an equivalent grant at all, and e to be stopped. Some grants had been made for nstruction to Great Britain and Ireland before 1890, large grants were made to Great Britain out of the noney" for technical education. The Irish equivalent ly to national education and partly to intermediate but whereas in Great Britain the previous grant to instruction was now dropped, it was continued from r in Ireland, as the "equivalent" had been diverted to ches of education, and otherwise the existing technical —what there was—must have forthwith disappeared. money that went to national education has reverted partment, and the Treasury contends that, after the specific grant of £55,000 to that Department under the Board of Agriculture Act of 1899 for technical instruction, the £3,500 should lapse, and that its continuance since 1899 had been an act of grace.

THE Intermediate Board have also had their differences with the Treasury, and, in consequence, their system of inspection has, for the present, been dropped. It is presumed that the abandonment of inspection is only temporary, and that it will be revived in connection with a wide-reaching scheme, as Mr. Wyndham has stated in the House of Commons that the report by an English inspector on Irish intermediate schools was almost ready.

THE Intermediate Board has issued notices that the practical examination in music will begin not earlier than the end of April, and will conclude before the end of May. The examination of choirs and orchestras will include the performance of a piece selected by themselves and an easy piece selected by the examiners, to be performed after a short interval of preparation. There will be no special certificate this year for passing in music. In the practical examination students may take the course prescribed for any grade; but, for the examination in theory, they must take the course prescribed for the grade in which they present themselves for the examination generally.

THE Board has also issued a cryptic circular relative to schools which may have some good reason for not being able to present students in practical science. If they can make good their case to the satisfaction of the Board, such schools may substitute Latin, or history and geography, for practical science. Why is such a circular issued at this time of the year when the school year is half over? And what is the object of this *volte face*, after such loud insistence that practical science should become a *sine qua non* in every school?

WELSH.

THE County Council elections for Wales are now completed, and constitute an uninterrupted and unique series of triumphs for the Progressive party led by Mr. Lloyd George. Brecon and Radnor, the two doubtful counties, have decided to throw in their lot with the rest of Wales, and there is now an absolutely united policy throughout the counties of Wales of opposition to denominational teaching of religion in the schools, and to the appointment of teachers in the Council rate-aided schools, provided or non-provided, by others than representatives of the ratepayers. To make the victory still more pronounced, Mr. Lloyd George advises that in the election of aldermen "the Tories should not this time" be allowed to "get their men on."

EARLY last month, the Board of Education issued a notice that a public inquiry would be instituted at Carmarthen into the action of the Carmarthenshire County Council, in failing to be responsible for and controlling the secular instruction in sixty non-provided schools, in failing to provide managers for them, in failing to maintain and keep such schools efficient, and in having withheld their consent to the appointment of teachers on other than educational grounds. Mr. A. T. Lawrence, K.C., was appointed the Commissioner to hear evidence on the whole matter.

AN interesting sign of the times—educationally—is the splendid offer of Mr. David Davies, Llandinam, on behalf of his family, to subscribe £12,000 towards the erection of a new college for the Calvinistic Methodists. There are two conditions: (1) That the present colleges at Bala and Trevecca be united into one

college for the whole denomination; (2) that the new college be situated at Aberystwyth. Such a project means the bringing of the teaching of theology into closer touch with the academic associations of a university. Such a movement will be good for theological students themselves. It would also be of great value for the University College, for it would bring into the town students who, having taken an Arts degree, are doing post-graduate work for a theological degree.

The favourable reception given by the Chancellor of the Exchequer to the request urged by the university colleges of England for an increased grant led the Welsh colleges to look for a similar favourable reply to the deputation on their behalf. But Mr. Austen Chamberlain's answer was that if comparisons were made, even with the increased grants to the English university colleges for which he was prepared to ask Parliament, it would be found that the Welsh university colleges still enjoyed more favourable conditions than the English and Scottish colleges. He further intimated that future claims must be largely affected by the extent of the local contributions which might be forthcoming. But surely it must be clear to every one that where the large centres of industry are placed there is more local wealth to draw upon than in such places as Aberystwyth and Bangor, and even than in Cardiff. Take, as basis of public usefulness, the number of students in the three colleges of Aberystwyth, Bangor and Cardiff, to the population of Wales, and the urgency of assistance to such colleges, in the midst of a poor community who have been willing to make great sacrifices *in proportion to their means* for their colleges, will be apparent.

At Barry, the local education authority has decided that only the head teachers are to be empowered to inflict corporal punishment. In the meantime, it is stated that assistant teachers are being exposed to indignities at the hands of the children. It is said that they are being insulted, and even that stones have been thrown at them. "Discipline, in the circumstances, is difficult to maintain." A petition on the point, signed by nearly every teacher in the Barry district, has been submitted to the local education authority, asking for a revocation of the limitation.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

A First Year French Writer. By G. H. Wade. viii. + 184 pp. (Rivingtons.) 2*s.* 6*d.*—The first section of seventy-nine pages contains exercises, consisting of detached sentences, a number of which are nothing less than foolish. What is the good of asking our pupils to translate: "The master's schoolboy. I loved the apples: they were growing quickly. He had looked for the bread: he would have found the butter. Thou art dirtying thy sister's letter. The fat nurse would look for the heedless children." The second section consists of a short grammar, with which the exercises are connected. The author has evidently striven to make his book useful; but we feel sure that he might have rendered the exercises more attractive. The book may be of service to those who prepare for the junior locals.

Classics.

The Oedipus Coloneus of Sophocles, with a commentary, abridged from the large edition of Sir Richard C. Jebb. By Dr. E. S. Shuckburgh. lii. + 298 pp. + plans. (Cambridge University Press.) 3*s.* 6*d.*—This edition, like that of its predecessor which we lately reviewed, contains the greater part of the commentary and introduction of the larger edition, omitting (with the translation) chiefly the detail of textual questions and controverted interpretations. As we said in commenting upon that edition, this is not the way to compile a school-book; but the book is well suited to the university man who is not bent on absolute mastery of his subject, or for the pick of sixth form schoolboys. Even they will find a good deal more than they want. We cannot help wishing that Prof. Jebb, or some scholar of equal eminence, would produce a few real school editions of Greek plays; for those now in the market are either compiled by men of no authority or are too full of miscellaneous information to be quite the right thing. We doubt the wisdom of illustrating Greek metres by English (p. xxxix.). It should be possible in a chorus, if anywhere, to bring home to boys the musical character of the Greek quantity. As regards the general character of Prof. Jebb's editions there is no need for us to speak. His consummate tact, taste, and knowledge have been recognised by all competent to judge. The style of the translation is his weak point; and that is absent from the abridged edition.

Demosthenes Orationes recognovit brevique adnotatione critica instruxit. S. H. Butcher. Tomus I. xx. + 451 pp. (Clarendon Press.) 4*s.* paper; 4*s.* 6*d.* cloth.—English scholars and schoolboys alike will welcome this new Demosthenes. Scholars will find a sound text carefully edited, and an admirable account of the MSS. such as they will seek long ere they find elsewhere; besides the discussion of these, their description fills five pages, and includes a list of the papyrus fragments. Schoolboys will rejoice to see a substitute for the hateful Teubner print. Both will for the first time have the MS. evidence clearly set forth at the foot of the page in a handy edition. The present volume contains the Olynthiacs and Philippics and orations associated with them, several shorter orations, "On the Crown," and "On the Embassy": just the portions best suited for school work. We predict for it a speedy sale and a large one; we have found these Oxford texts admirable for school use in all respects except one, that they are sometimes rather too thick. We note that this volume is paged, a useful innovation.

A First Latin Reader, with Exercises, Notes, and Vocabulary. By K. P. Wilson. 177 p.p. (Blackwood.) 1*s.* 6*d.*—This book is a new example of an old type, and a dreary type it is. That is not Mr. Wilson's fault, who did not invent it; but the fault of those who ceased to practise Latin as a spoken language. Their dry leaves are left to us in the shape of a *Delectus* or a sentence book, and the spirit which gave those things life is gone. If Latin is to be taught by isolated sentences, unassisted in sense, Mr. Wilson's book will do to teach it; but we hope to see this and all such soon superseded by what is only a revival of the old and only true system of language teaching, *viva voce* instruction by teachers who have the language at their tongue's tip. No book of sentences is of any great use; we want materials in the shape of intelligent Latin, and intelligent teachers to manipulate it. When Mr. Wilson gets beyond the elements he is much better; he has collected a number of simple stories which will be useful to the intelligent teacher when he comes along. But he has only half the system. A number of exercises for retranslation are added.

Cicero; "De Amicitia." Edited by the Rev. F. Conway. xxvii. + 119 pp. Without Vocabulary. 2*s.* "*De Senectute.*" Edited by G. H. Wells. 188 pp. 2*s.* *Philippics.* V.-VII. Edited by T. K. Brighouse. xlvii. + 170 pp. 2*s.* 6*d.* (Blackie's Illustrated Latin Series.)—It is not possible to say that new editions of the first two of these books were needed,

the excellent commentaries of Dr. Reid in the Pitt
es, not to mention others. The illustrations of course
ifference; but we hope before long that the ideal
nay be hit on, by which a pupil need not buy three
f Cicero if he reads three of Cicero's works. The
sm supposed to be a mark of English character is
in all these new series of school books, where each
ated as if it existed like a solitary comet wandering
pace. One day we hope to see texts, comments,
es, and illustrations all separately produced, to the
he pupil's purse and the satisfaction of the teacher.
these first two books contains, besides the inevitable
cero, a sketch of his life: these do not greatly differ in
from each other and from the numerous other accounts
in similar books. There is, however, a note of
ty about each of them which makes the editors'
of the great man worth reading; and we are glad
it their notes are better than the average of school
Ir. Conway in twenty years' experience has learnt
lf is often better than the whole, and is commendably
ile Mr. Wells, fuller in amount, does not waste
has something useful to tell.
ame time, we notice the usual "opportunism" (if we
he phrase). They are content to explain the text
m, but do not sufficiently realize an opportunity to
e a principle. *Memini* with the present infinitive
p. 58) is not used because it refers to "a personal
," but because "I remember seeing" implies past
at either present or perfect infinitive may lawfully be
it. The generic subjunctive (*De Sen.*, p. 90) is not
connexion with a class, but to the idea of consequence.
blemish that editors are so short-sighted; and those
l of hundreds of notes in modern school-books.
the writers are wrong, or at least misleading. Thus
(p. 86) talks of the "lengthening of a usually short
arsis" on *versat* (*De Sen.* i.), apparently ignorant
lable was originally long when the verb-stem was long,
thing to do with the arsis: while Mr. Conway on *De*
nplies that a *cum*-clause may be subjunctive "because
with the *tum*-clause," the real reason being its conces-
as he admits in the same breath. Our schoolmasters,
are still empirics. Mr. Wells adds a few notes on the
s, a useful innovation in this series, which is very
in its treatment of illustrations; but we are not told
k vase paintings are reproduced cheek by jowl with
aginative paintings in a Latin text. The illustrations
f the modern school books are obviously the choice

ighouse has more excuse for his edition than his
s. We do not know of any school edition of these
ppics, and they are for many reasons very suitable
be read in schools. We are glad to be able to say
ook appears to be well done. The introduction in
which bears with the politics of a troubled period, is
so is the substance of the notes, if they are rather too
eir purpose. All these books are accompanied by
a retranslation which will be found useful.

Edited Books.

's Golden Treasury of Songs and Lyrics. Book I. Fowler, xi. + 142 pp. (Macmillan.) 2*s.* 6*d.*—brings to an end the useful enterprise of rendering rave's beautiful anthology accessible to students in l days. They could hardly, one thinks, come to the too early. Pre-eminent among books of its class, it has been accorded splendid treatment in this edition, and this volume, which deals with the Elizabethan period, is as good as any of the others, and perhaps somewhat more interesting because it is confessedly a little more difficult in the matter of thought and language. The notes are singularly good reading, and are uniformly of great value. The appendix on the Sonnet is well worthy of attention also.

The Second Epistle of Paul the Apostle to the Corinthians. By Dr. A. Plummer. (Greek Testament for Colleges and Schools.) xlvi. + 264 pp. (Cambridge University Press). 3*s.*—Great learning is observable on every page of this edition, and a better volume of its kind does not exist professing to deal with this subject; for everything which can be debated concerning the manifold difficulties raised by this Epistle is well and admirably put, and some of the felicities of translation are peculiarly happy. To go over one-tenth of the points which have caught our attention in this edition would be impossible here. The section dealing with language and style is really a brilliant piece of scholarship. The volume cannot be too heartily commended.

The Gospel according to St. Matthew. By E. Wilton South. 162 pp. (Methuen.) 1*s.* 6*d.*—Mr. Wilton South has provided a really good school-book, and puts a great deal of elementary information in a new way. The introduction is most readable and thoroughly practical. The notes, which divide the pages with the text, are reasonably full and clearly expressed, and refreshing common-sense is displayed in many of them. There are six appendices, hardly indeed, by their brevity, admitting that title, but rather tables of one kind and another. That which summarises the teaching of the Gospel is well done. Nine sets of examination papers are included among them.

The Story of Our Lord's Life. By Mrs. Montgomery. 163 pp. (Longmans.) 2*s.* 6*d.*—This is yet another attempt to secure juvenile attention for the story of the Gospel. It is simple, well told, effective for the end in view, illustrated by some highly coloured plates, and quite orthodox. If "truth embodied in a tale" is one of the great desiderata of childhood, as it certainly is, this little volume realises the ideal.

Tennyson's The Cup. By H. B. Cotterill. 48 + xxxvii. pp. (Macmillan.) 2*s.* 6*d.*—This is but a small volume, but it is welcome and well done. An account of Tennyson's life and work, with some remarks upon his particular tragedy, constitute the introduction which is, however, nearly half of the book. The notes are excellent, but was it necessary to include one on "*exeunt*," seeing how commonly well understood that stage direction is? Some others are open to the same objection, but the edition is nevertheless highly praiseworthy.

The Knight of the Leopard. 80 pp. (Oliver and Boyd.) 4*d.*—This is another tabloid presentation of one of Scott's novels, in this case "The Talisman." The quintessence of the story is given in twelve chapters, but no great good can be spoken for this practice of deleting great works for the satisfaction of mean intellects. To refrain even from good words is surely expedient in the interests of literature. From the same house comes "The Vicar of Wakefield," in the same form (80 pp., 3*d.*) and open to the same objection, though the abridgment has been managed with skill. The celebrated "Tales from Shakespeare" of Charles Lamb and his sister Mary are also presented in the same format. Part III. (68 pp., 3*d.*) and Part IV. (80 pp., 3*d.*) lie before us. They are clearly printed. Their simplicity and adaptability to the needs of young minds was their very *raison d'être*. Hence in this series they are quite appropriate.

Macaulay's Life of Samuel Johnson. By C. L. Hanson. 94 + xxxiii. pp. (Ginn.) 1*s.*—There is some careful work in the Introduction, yet it is set forth in such a popular Mutual Improvement Society style that it ends by disclosing the editor's imperfect acquaintance with English things. A section on "Reference Books" is, however, very useful and complete. The text includes a portion of Macaulay's "Essay" as well as the later "Life" of the extraordinary and immortal sage of Fleet Street. The notes have been compiled with elaborate effort, but we do not approve of them unreservedly. Many of them are put in the form of questions, *e.g.*, "Do you suppose that either Johnson or Goldsmith really believed that one form of government is as good as another?" Sometimes they aim at giving good advice, as on p. 81. "Every young man should read an abridged edition of Chesterfield's 'Letters to his Son.'" Notes of both kinds ought to be inadmissible in an educational edition; and so ought the following, for it is as wrong as a distance of two or three thousand miles from the spot can make an editor who is not clear in his geography (p. 90.) "*Streatham*: Nearly as far north-west of Fleet Street as Southwark is south-east of it, the site on which the British Museum now stands." This is appalling. American scholarship so often wins our unstinted admiration that this book tends towards disillusionment.

Scott's Rob Roy. (Continuous Readers.) xx. + 220 pp. (Black.) 1*s.* 6*d.*—This abridged edition of Scott's novels, with its constant features of brief introduction, carefully "cut" text, numerous illustrations and brief, clear notes is now well known. "Rob Roy" displays all these features, and as a reading book may be generally commended. Scott's own introduction to his novel is likewise served up in these pages in a deleted form. But we do not see why even so mechanical a business as abridging a work like this should be anonymously put upon the market.

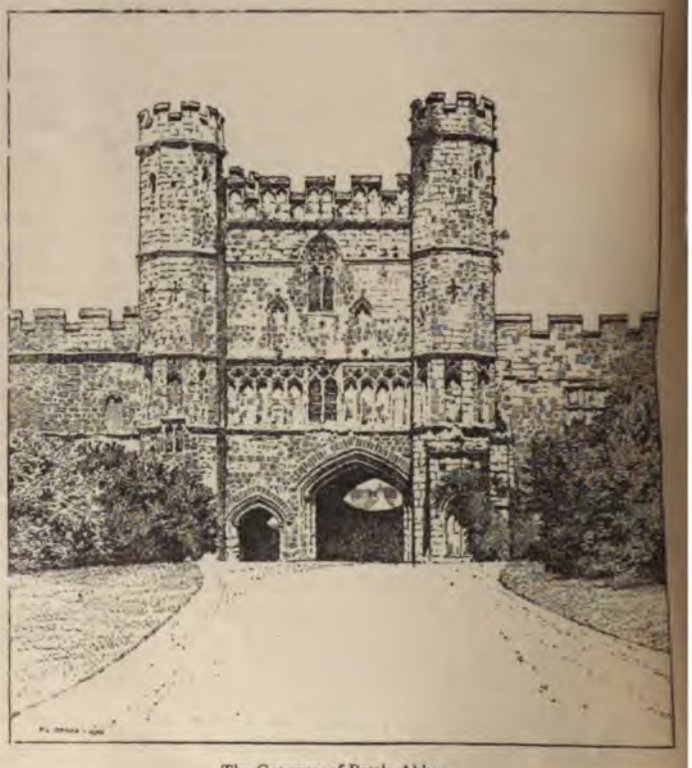
English.

Elements of English Composition. By T. F. Huntington. xiii.+373 pp. (Macmillan.) 3*s.* 6*d.*—One would like to write a series of articles on this book. It bristles with controversial points, though controversy is absent from its pages. It is crammed with suggestions for the English teacher, though as an English class-book it is well-nigh impossible. Its specimens from authors are admirable, though not one in five will be familiar to the sixth form. If anyone wishes to feel fresh air rushing in upon him, making him feel that he has "found the pass in the mountains," he should read the first fifty pages of Mr. Huntington's book. "Creative work precedes and out-ranks critical work." "Get speed in composition, get naturalness." "Leave corrections of faults to the very last." "Let your boys choose their own subjects." "Let half-a-dozen different subjects be chosen by half-a-dozen different boys." "The paragraph is the secret of success." "Choose a newspaper paragraph in the new style and turn it into plain English." Are not these *obiter dicta* enough to whet the curiosity of persons who set for composition these subjects: Fidelity, Thrift, A Rainy Day, the Fiscal Question? The book is reactionary in its first (the more valuable) half; it leaves all higher grammar to the very end; but the present writer would give much to be able to work on the lines here laid down. No mere short notice can do justice to this whole-hearted attempt to make composition what it should be, a recurrent delight. The book is filled with Americanisms (Mr. Huntington is a Harvard man), and on the first page we are asked to set a composition on shinny, or mumble-the-peg (meg-in-a-hole, mumble-peg, and numblety-peg being given as variants for us to choose from).

Advanced English Syntax. By G. C. T. Onions. (Swan Sonnenschein.) 2*s.* 6*d.*—This book belongs to the Parallel Grammar Series, which is well known, and the influence of the study of classical syntax is seen throughout. It will repel teachers of grammar by the new nomenclature in the Introduction; but it is time that some one authoritative nomenclature for English, French, German, and classical syntax was introduced into the schools. Mr. Onions says in his preface that his connection with the Oxford English Dictionary has given him facilities for research. We wish he had used them more freely; for we have in English, what we have not got for Latin, a very distinct history of three syntax difficulties out of four, and it does seem that for boys at school who want to *understand* English syntax there must be two treatments of each separate conundrum—(*a*) historical, (*b*) psychological. Our syntaxes up till now have limited themselves to the second, and are full of self-imposed difficulties. It is pleasant to read in Mr. Onions' book, "There are sentences in English which it is impossible to analyse grammatically." Not many writers are so candid.

Geography.

Highways and Byways in Sussex. By E. V. Lucas. With illustrations by F. L. Griggs. xx. + 424 pp. (Macmillan.) 6*s.*—Sussex is so rich in Roman, Saxon, and Norman relics that this volume should serve to provide many interesting notes for lessons in schools outside the county as well as in it. It was from Bosham at the western extremity that Harold sailed on his visit to Duke William, and on the Bayeux tapestry Bosham Church is depicted with Harold and his company



The Gateway of Battle Abbey.

Close by is Chichester—Cissa's Ceastre—with its roads running north, south, east, and west, as the made them. A few miles east is the feudal town of nd its imposing castle existing together exactly as they in Normandy, and carrying the mind back to the ges. Hastings, with Pevensey, where Duke William September 18th, 1066; Battle Abbey, founded in is victory, and Hurstmonceau Castle not far away; ith its Saxon customs and its castle and priory, y Earl de Warenne and his wife (the Conqueror's Alfriston and its Saxon cross; Winchelsea—once a rt of the first magnitude, now an inland resort of the and the artist; and Rye, just as rich in historical s. These are only a few of the centres of interest Mr. Lucas, and his descriptions of them and other he county make up a bright and instructive volume ld certainly find a place in the school library.

Geographical Readers. The British Empire. 272 pp. .) 1s. 8d.—This is an excellent reader, well written ustrated. The geographical summary at the end of , with its coloured maps, will serve admirably to and concentrate the information contained in the ons. Many of the selections contained in the book d from distinguished authorities on geographical

rld in 1904. By C. A. Wood. 124 pp. (Man- ohn Heywood.) 2s. net.—Mr. Wood here gives a f information in a minimum of space. The unit of ns seems to be that of the town of Bath: thus, on re told that Baku is one and a-half times Bath; on Port Arthur is less than Bath; and on p. 95, that is six times Bath." There are fifty-seven clear the "20th-century King's Scholarship Geography are printed at the end of the volume. The type of oo small, and it is insufficiently leaded.

Science and Technology.

cher's Logic. By John E. Adamson. 200 pp. d Dible.) 2s. net.—The title of this book is very . It is not only a good handbook of logic, but all pages the bearing of logic upon the art of teaching pt in view. The illustrations are largely taken from of school-work—grammar, arithmetic, nature-study, science. Good method in teaching just means logical ceeding upon psychological lines. The young teacher e secret of method if he sets himself to master these w that inductive and heuristic procedure is insisted ching not merely geography and science, but even jects like grammar and arithmetic, the value of a his goes without saying. The author knows logic, is much rarer, knows something about the art of We can recommend the book for use in training- d for private study by all schoolmasters who wish to ir power of clear exposition and logical teaching.

undwork of Psychology. By Prof. G. F. Stout. Clive.) 4s. 6d.—This new book of Dr. Stout's is of that, if educational science owes much to psy- latter science in its modern developments is becoming indebted to the study of children which educational ve taken up so enthusiastically. Some of the best dern psychology has been done under the stimulus al interest. We quite agree with Dr. Stout's t this new book of his is "in some respects ment on the 'Manual.'" And one reason among hat "one distinctive feature of it is the free it makes of material derived from observation of young children." The charm of our author's writing is that he is not dogmatic, but thinks out his subject with the reader as he goes on. To read the book carefully is to acquire the psychological habit, the power of analysis and insight, the faculty of interpretative vision. It is book and teacher in one. The chapter on the early development of the child is suggestive in its very simplicity, and his treatment of language, attention, and mental imagery—productive and reproductive—is characterised by freshness of illustration, and a limpid clearness not at all usual in philosophical treatises. Dr. Stout is not disposed to accept the theory of emotion set forth by James and Lange, which makes emotion the consciousness of vaso-motor and other organic changes. The significance of that theory he holds to be more physiological than psychological. For "an emotion is a feeling-attitude of the subject toward an object; a sensation is nothing of the kind." This book will lay a sure foundation, a trustworthy "groundwork of psychology," for student or teacher.

Elementary Practical Chemistry. Part II. Analytical and Quantitative. By Dr. F. Clowes and J. B. Coleman. xvi. + 212 pp. (Churchill.) 2s. 6d. net.—Teachers of chemistry will welcome the separate publication of the parts of this deservedly popular book on practical chemistry which deal with qualitative, volumetric and gravimetric analysis.

The Marshfield Maidens and the Fairy Ordina. Vol. II. By Mrs. W. H. Wigley. 254 pp. (Murby.) 1s. 6d.—Mrs. Wigley's consecutive narrative, intended to supply a complete course of domestic economy and training for home duties, should prove interesting to girls leaving the elementary school to take up the duties of domestic service. If there were more mistresses like the Mrs. Somerton of this reader, we should hear much less about the servant difficulty.

Junior Country Reader. III. Talks on Country Life. By H. B. M. Buchanan and R. R. C. Gregory. viii. + 198 pp. (Macmillan.) 1s. 4d.—Even children in rural schools will be able to recognise that the authors are writing from first-hand knowledge. The reader is bright, practical and informing; and the excellent illustrations alone are enough to make the book a favourite with country children.

Botany Rambles. Part I. In the Spring. (Horace Marshall.) 10d.—This book is an attempt to impart to young people useful and interesting facts about plants and trees by means of reading lessons. We are disposed to think that children will call parts of the lessons "babyish." The illustrations are numerous and good.

Nature Study and the Teacher. By D. C. Williams. xv. + 119 pp. (Charles and Dible.) 2s. net.—The author sometimes asks teachers to attempt the impossible; for example, in reference to Standard I. children, teachers are instructed to deduce from the class—"by a few judicious questions"—that roots feed the plant and that the leaves do the breathing and that "the flower propagates and so perpetuates the species." Children in the same class are to be bothered about "stamens" and "pistil"; longitudinal and diagrammatic sections, and so on. This is not the way to introduce very young children to nature-study, and we are sorry that with all his knowledge Mr. Williams should advocate such a plan.

Practical Physics for Schools. III. Electricity and Magnetism. By C. J. L. Wagstaff and G. C. Bloomer. 117 pp. (Cambridge: Heffer.) 2s. 6d.—The plan of this series was described in our issue for December, 1903, and what was said of the first two parts applies to the present instalment. The student will be unable to work alone from the present volume, and, indeed, the authors say in their preface, "no attempt has been made to dispense with the aid of a teacher." As indi-

cating the general idea of the volume, we may say that pp. 64 and 65 are blank, with the exception of the following sentence: "Examine, sketch, and explain the working of the following **influence machines**: the Water-dropping Accumulator, the Replenisher, and the Wimshurst."

Mathematics.

A New Geometry for Junior Forms. By S. Barnard and J. M. Child. xvi. + 306 pp. (Macmillan.) 2*s.* 6*d.*—This volume consists of the more elementary parts of "A New Geometry for Schools," by the same authors, together with several additional sections. A very welcome feature is the short but lucid treatment in section 13 of the forms of simple solids; the practical side of the subject is also presented in a thoroughly satisfactory manner. The changes that have been introduced seem to be all in the right direction, and the book can be cordially recommended. It should perhaps be added that the range includes (roughly) the subjects of Euclid, Books I., III. (1-31) and the easy parts of Book IV.

Arithmetical Examples. By W. G. Borchardt. viii. + 279 pp. (Rivingtons.) 3*s.*—Except for the addition of a test paper on graphs, these examples are taken from the same author's "Arithmetical Types and Examples" noticed in the December, 1903, number of The School World. This book contains tables, examples and answers, but no worked-out models; it provides good and ample practice in arithmetical work.

Arithmetic. Part II. By H. G. Willis. viii + 257-494 + xxxix pp. (Rivingtons.) 1*s.* 4*d.*—A collection of examples on the later work in arithmetic, beginning with factors and fractions. The examples are arranged in two sets which may be used in alternate terms and seem to be well chosen. "Money sums" do not monopolise the book; there is a good selection on areas and volumes, on specific gravity, on mixtures, on permutations and combinations, on probabilities, and a considerable number on graphs. Teachers should find the book very useful.

Rudiments of Geometry for Junior Classes. By M. Wilson. 228 pp. (London: W. R. Russell.) 1*s.* net. — A modest preface, giving an account of the way in which the author thinks the subject of geometry may be best introduced to pupils of about twelve years of age, produces a favourable impression which is confirmed by an examination of the contents of the book. While not possessing striking novelties, the development is carefully and thoughtfully carried out, and seems very suitable for beginners. The theorem of Euclid I., 47, and the propositions on rectangles are, we think, too late in appearing, and the treatment of areas would be improved by a fuller consideration of the metrical value of a rectangle as well as by the discussion of the areas of similar figures. The text is limited to one side of the page, the other side containing diagrams only; this arrangement contributes clearness, but perhaps at too great expense. If used in the way the author suggests, the book seems fitted to yield good results.

The Metric System Explained, with Exercises, Examples and Illustrations. By Georges Rousselle. Translated and adapted by R. Smith. xiv. + 97 + i. pp. (Paris: Gedalge. London: Hachette.) 1*s.* 6*d.* net.—This little book, which bears on its title-page the date 1896, is published under the patronage of the British Chamber of Commerce at Paris and is designed to promote the movement for the introduction of the metric system into this country. The explanations here given are admirably clear, and range over all the weights and measures in common use; numerous diagrams and illustrations contribute to the lucidity of the exposition. It is of little use at this stage to move resolutions about the advantages of *the* metric system; few teachers, at any rate, have any doubts on the matter. Reform must be urged in the only quarter where action can be successfully taken, and that is in the House of Commons. Pressure on their parliamentary representatives is a duty which teachers owe to their pupils.

Arithmetic for the Standards. Scheme B. Standards VI. and VII. By C. Pendlebury. (Bell.)—These belong to the series noticed in November, 1903 (p. 434) and follow the lines there indicated. The prices are 4d. and 6d., according to cover, and the books run to 64 pages.

Miscellaneous.

Short Studies in Education in Scotland. By John Clarke. xv. + 269 pp. (Longmans.) 3*s.* 6*d.* net.—These short studies are offered as a contribution towards the solution of the many problems which surround the education question in Scotland. The opening chapters are largely retrospective, and give an admirable conspectus of the genesis and history of the educational system of the country. The author shows that, from a variety of causes, secondary education has passed into the hands of "several unrelated bodies all operating on lines of their own, with consequent overlapping, confusion, and antagonism. Multiplicity of agency was still further aggravated by insecurity of resources." Thus far the problem. As a contribution to its solution, one could have wished that the present volume had appeared earlier, as in several instances it supports with a wealth of argument and illustration a policy opposed to that generally accepted and expounded so ably by Dr. Douglas and Prof. Jones. The most valuable and original feature in Mr. Clarke's book is the insistence on the marked distinction between the educational problem in town and country. In rural districts there are few secondary schools, but much secondary education. Mr. Clarke shows that in the northern counties of Ross, Inverness, Sutherland, and Caithness, the average percentage of population, aged 14-20, in receipt of secondary education is over 21 per cent., while in the south-western counties of Renfrew, Ayr, and Lanark it is 7·9 per cent. Most of this secondary education in the northern counties is obtained at the ordinary village school, and, for geographical and economic reasons, must continue to be received there or not at all. We heartily commend this volume to all interested in education, and could wish that it would be "studied and inwardly digested" by Scottish members of Parliament at the present time.

The New Movement in Education, with Special Reference to Elementary Education. By Thistleton Mark. 107 pp. (Charles and Dible.) 6*d.* net.—A reader with no particular knowledge of educational developments would be sure to obtain from Mr. Mark's little book a good idea of the recent tendencies in the direction of making the instruction in our school more practical and better suited to the needs of the children. Mr. Mark writes in an interesting style, and has a wide knowledge of his subject.

The Democratic Ideal in Education. By R. E. Hughes. 70 pp. (Charles and Dible.) 1*s.* net.—It is a little difficult to understand the object of this book. The author knows a great deal about education, it is true, but we fear he has not said much in this case likely to be of practical value to those actually engaged in educational work. The danger of following foreign methods of instruction too slavishly is pointed out more than once, and the paramount importance of cultivating individuality in British schools is repeatedly urged.

Educational Woodwork. By A. C. Horth. 159 pp. (Percival Marshall.) 3*s.* 6*d.* net.—Of the books that treat woodwork as an important factor in school education this is certainly one of

the best we have seen. The first 97 pages consist of a carefully graduated three years' course of work, while the remainder of the book is addressed to the teacher and contains valuable advice on fittings, organisation, object lessons, &c. To manual training teachers both parts of the book will be of great value. It might be improved in a few respects; more might have been made of freehand sketches; the models are too much restricted to school apparatus; the drawings illustrating mortise cutting are not clear, and some of the botanical definitions are faulty. For the convenience of teachers desirous of adhering to the courses laid down, each year's course is issued separately, as a little book at 4*d.* net, for use by the pupils.

Cassell's Union Jack Series Readers. Book IV. 206 pp. 1s. 2d.—The latest addition to this series is like previous volumes, full of interesting reading matter and abundantly provided with good illustrations.

The Swiss Family Robinson in Words of One Syllable. 95 pp. (Cassell.) 6*d.*—Children beginning to read will find this simplified edition of a popular book very much to their taste.

CORRESPONDENCE.

Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in The School World *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Need of Co-operation between Humanists and Realists.

A brief reply to Prof. Armstrong. By an interesting coincidence, a writer in your March issue comments on p. 93: "In teaching, more perhaps than in anything else, the *data* make all the difference. The human boy, the exigencies of time-tables, the freaks of examining bodies, and a hundred other things, cause grievous rents in pedagogic theories. . . . Criticism and suggestion which does not take account of all the parts we play and of the limits of the stage is predestined to miss its mark."

That is the strain which we expect in educational discussion from one who keeps in touch with fact. Contrast it with Prof. Armstrong's jejune advice to me—"Swim without a belt," "train your mind to think otherwise than in hour intervals"; and this in The School World, a paper which specially fixes attention on education as seen from the practical side.

Again: "Until teachers learn to make experiments for themselves, there will be little progress." So Prof. Armstrong reads the record of recent years. As if experiment, in some form or other, were not a law of our being; as if any competent teacher could or would dispense with it. True, the special experiment to which Prof. Armstrong has invited us does not seem as yet likely to be tried on an extensive scale; but, even in this brief discussion, two of his critics advocate a partial adoption of it.

Mere theory, of course, we wish to test before adopting. For instance, the proposal to teach the English language with incidental work in anthropology, geography, history, and grammar, looks at first sight rather chaotic. Test it in the light of the explanation offered to Prof. Edgar, who is advised, "incidentally," that is, "when not engaged in professing education," to devote himself to experimental work, to take it up as a subject in fact. Is this the way in which boys and girls, while learning English, and devoting, remember, at least half of their school time to manual and physical work, are to "master" anthropology, geography, history, and grammar? As these will not be taught as specific subjects, does the proposal mean that boys and girls are to "experiment" for themselves? If so, how? To clear the haze, I suggested a time-table. No, is the retort; make it yourself—experiment—swim—flounder—but expect no further help from me!

Prof. Armstrong, in fact, lives in a region far above us, a sort of heaven of theory, and the sole notice he takes of the actual workers is to drop occasional thunderbolts on their heads.

Percy Simpson.

St. Olave's Grammar School.

If Prof. Armstrong really desires to combine the forces of all interested in education, to fight against our real enemies, the ignorant public, he is most unfortunate in his methods. I have read a large number of his letters in *The Times* and elsewhere, and all seem to show the same bitterness. Most classical teachers are agreed that things are not as they should be; and, whatever may once have been the case, there is no need to fear now that natural science will be neglected. It is the only subject which the Government encourages by its money grants; and the curriculum of schools of class A, which obtains the largest grant, tends to be almost as preponderatingly scientific as the old education was literary. There is a real danger that the subjects which appeal to the imagination, taste, and feeling may be almost extinguished in the near future, and all attention directed to the more sordid aim of getting money in one way or another. Will not Prof. Armstrong turn his energy in another direction, and try to show the public (who will, of course, be followed by the Board of Education after some interval) that we need a well-reasoned general scheme, entirely independent of money-making, which should be aided as a whole (not a part only) by public money. The details of such a scheme cannot be discussed in the public press, but it must be thought out quietly and planned by competent persons of wide general experience. Prof. Armstrong is greatly mistaken if he thinks that salvation is to be found by abolishing Greek and all "Hellenism," and substituting chemistry; or that two things can be done at once, *e.g.*, that English composition can be learnt in the laboratory whilst chemistry is being studied.

As a practical schoolmaster, who has opportunities of seeing some things which Prof. Armstrong has not, I find that both Greek and natural science have things to teach boys which cannot well be dispensed with, and that neither can give what the other gives; further, that English composition may be *practiced* in describing experiments or in doing Greek unseens, but it cannot be *taught* in either—it must have its own time, when the mind is not distracted by other things. But these things must be talked over, and experiments tried, in a very different spirit from that of heated invective; and I would venture to urge Prof. Armstrong to examine Mr. Headlam's Report and other of the Government papers, and to realise that it will not be to the public interest—not even, in the long run, to the good of scientific research—if literary studies, that is, the essential part of culture and refinement, should practically disappear from the average English school.

W. H. D. Rouse.

Cambridge.

The Content and Methods of School Classics.

Mr. Winbolt's article in your February number is extremely interesting and suggestive, but I am not quite convinced that he has made out a strong case. "Culture" connotes a liberal education. Can a boy be said to have a liberal education if he has devoted half his time, and probably three-fourths of his energies, for eleven or twelve years to the study of classics? Ignorant as such a boy is of science and modern literature, and having only a superficial knowledge of mathematics, modern languages, geo-

graphy and history, he has little claim to culture. Mr. Winbolt desires for his own subject two-fifths of the school time. Why *two*-fifths?

Let us consider the principal subjects of the school time-table. There are five principal groups: classics, mathematics, English subjects, modern languages and science. Taking the average working week as 22½ to 25 hours, we have from 4½ to 5 hours for each group. This suggested equal division of time is, of course, only a rough working basis. We may, perhaps, narrow down the curriculum at the age of sixteen or thereabouts, but is it desirable to do so before?

That, under existing conditions, teachers are more or less compelled to make boys specialise at an early age must, perhaps, be admitted. School traditions and university requirements have, unfortunately, to be respected. But is not the root of the difficulty deeper? Does it not lie in the tendency of many teachers, and especially of classical teachers, to regard their own subjects as of supreme importance, and to belittle, if not to despise, all others? The classical man finds fault with his science colleague because he asks for eight hours a week. Who can honestly say that the work of the one is more—or less—important than that of the other? One is tempted to say—a plague upon both of them! Let each have four hours and be content.

It seems interesting to enquire whether most, if not all, of the advantages claimed by Mr. Winbolt for classical teaching cannot be secured by other means. Take, for instance, the question of "literary appreciation," of "taste," of "imagination," and of "intellectual detachment." With these objects in view Mr. Winbolt would probably place "Homer, Sophocles, Thucydides, Plato and Livy, Virgil, Horace, and Tacitus," before Molière, Corneille, Voltaire, Victor Hugo, and Lessing, Schiller, Goethe, and Heine. If so, why? In the intellectual effort a boy has to put forth when with dictionary, grammar, and text, he is unravelling the difficulties of another language, no doubt the advantage lies with, say, Sophocles and Horace rather than with Molière and Goethe; but any possible loss in this direction—in logical reasoning and hard thinking—can, it seems to me, be made up in other ways. Cannot mathematics and science supply the deficiency? The difference, if any, is one of kind rather than of degree. Again, is the "life and history" and geography of the ancient Græco-Roman world more educative than that of modern Europe? It may be as interesting, but cannot be so useful.

I am inclined to regret that Mr. Winbolt tilts against the term "useful" education. If, however, he refers to such purely technical subjects as bookkeeping, shorthand, and commercial French, I am quite at one with him. If, on the other hand, he is thinking of art or science, I cannot agree. If science is not taught, certain faculties necessarily remain undeveloped, and a boy's education is to that extent incomplete. It is not so much a question of any particular branch of knowledge as of training, and if any portion of this training has some direct bearing upon a boy's future career, so much the better.

Another point occurs to me. Let us admit for a moment the force of the arguments on the other side—that a classical training is an ideal training for the boy who remains at school until the age of nineteen, who goes to the university, and then enters one of the professions. What about the boy who leaves school at sixteen or seventeen and goes straight into business? In Latin he has reached, say, matriculation standard, and has read, perhaps, a book of Virgil. Has the time given to Latin been profitably spent? The work done has been far too meagre to be of much good, especially from the point of view of scholarship. The plea that even this limited amount will be of material assistance to a boy in the study of his own language is, I believe, fallacious. Of nicety of discrimination there will have been little, and of literary appreciation less. It seems to me that in this case, whilst nothing would be lost if Latin gave place entirely to modern languages, the gain would be great.

We should make much greater progress in the education of the world if we tried more to understand one another's points of view. The classical teacher and the science teacher are great offenders in this direction, and seem never to be happier than when banging each other's head. In America and, to a great extent, in Germany, each has learnt to appreciate the work of the other, and each readily admits that his own contribution to the work of the school is only one of several necessary factors in the scheme of education. When will English teachers do likewise?

Can those of us who are anxious to obtain for our schools a well-balanced curriculum persuade Mr. Winbolt to accept four or at the outside five, hours for his own subject?

F. W. W.

Bedford.

YOUR correspondent, F. W. W., in his very temperate letter seems to imply that in my article I expressed views as to how the different subjects of modern curricula should be balanced. This subject I did not attempt to touch: I confined myself to expressing my view of what ought to be done by classical teachers in whatever time the wisdom of our educational authorities should see fit to allot to us. I did not even discuss two-fifths of the time available; I merely stated roughly what I thought was the custom. With F. W. W., I should not consider sufficiently broad the culture of a young man who in twelve years had given three-quarters of his energies to classical study; but, on the other hand, I do not believe that an equal division of our time between chemistry, mathematics, English, modern languages, and science is at all desirable. Of these I attach far the greatest importance to classics and mathematics, and of the others, I should make two more or less subsidiary subjects of science, and English and modern languages combined. A feverish anxiety to cultivate—by systematised education—all the faculties may possibly lead to our doing justice to none. Some modern educationists remind one of Samuel Jeake of Rye, who, at the age of nineteen, was "somewhat acquainted with the Latin, Greek, and Hebrew, rhetoric, logic, poesy, natural philosophy, arithmetic, geometry, cosmography, astronomy, astrology, geography, theology, physics, dialling, navigation, caligraphy, stenography, drawing, heraldry, history."

Your correspondent also seems to imply that I regard my own subject (*qua* my own subject) as of supreme importance. This I should very much regret, and, moreover, I should have learnt something of comparative values from eight years' teaching of English and German on the modern side. As to "intellectual detachment" and "intellectual detachment," I do not think that the study of modern languages is able to produce the same results as the study of Greek and Latin. In the study of Latin every word, idiom, or custom examined carries the mind back, consciously or less unconsciously, over more than two thousand years, and no satisfactory explanation can be reached till that distance has been traversed. Comparatively speaking, there is little dispute between English thought and idiom and German (or French) thought and idiom. This is a very real distinction, and one that is often neglected.

F. W. W. was right in supposing that by "useful" education I meant bookkeeping, shorthand, &c. When I made a tilt against science, I was attacking science as it is often nowadays taught. I was deprecating the tendency to substitute, in the case of boys of from 10-14, "interesting" puerilities for the necessity of taking the trouble to think. Of course, a book will not make a boy think; but still less will a spade.

S. E. WINBOLT.

The Lighting of Country Schools.

IN answer to the inquiries of Mr. E. Thesiger in your January issue as to what modern system of lighting is best for a small country school where there is no gas supply, I am glad to supply the following information.

Your correspondent will find acetylene very suitable for the purpose. Its advantages are, the comparatively small cost of installation, the small amount of attention required in working and the resemblance of the light to ordinary sunlight. The generator for the gas occupies but a small space, and may be in any separate outbuilding which is not much exposed to frost. Water supply and drainage from this plant are practically essential. Anyone with ordinary intelligence can manage the plant, which does not require an engineer. There are two types of generators, the automatic and the non-automatic. The former are, broadly speaking, less costly, take up less room, and use but little water as compared with the latter, which produce the whole of the gas from a given charge of calcium carbide at once, have practically no mechanism, and give a richer gas than many generators of the former class; they, however, waste more gas by absorption in the water than do the automatic generators. As to the cost of working, calcium carbide costs, say, 23*s.* per cwt. delivered, every pound of carbide will give about 4.5 cubic feet of gas for actual use, and a 30-candle power burner will consume about one-half of a cubic foot of acetylene per hour. Ordinary gas-fittings and pipes may be used for conveying the gas; the fittings must be a good quality.

The gas is used so widely now, as compared with a few years ago, that no difficulty should be found in seeing plant at work. I personally used it at Felsted for a variety of purposes, and its use there from 1896 to the present time has been attended with no accident.

I cannot claim more space here, but should your correspondent care to write to me I shall be glad to help him further if I can.

ALAN E. MUNBY,
Member of the Council of the Acetylene Association.

A Course of Modern Languages.

THINKING that our rather successful experience in the teaching of modern languages at a Training College for Secondary teachers (who propose to act as governesses in families) may possibly be of use to heads of other colleges, I subjoin the notes of our French and German mistresses as to their two years' courses (1902 and 1903.) All the French mistress's teaching is in French. No attempt is made to "get up" any of the subjects indicated, but the students receive, at any rate, a key to French history, French thought, and French modes of expression. Two hours a week are spent in "Gouin" lessons; and, besides, the students of each year are divided into two sets—advanced and less advanced; and these four sets take it in turns to spend from nine to twelve hours a week with the French mistress: the two advanced classes for a week at a time, the two less advanced for a fortnight.

French.

JUNIORS.—*First-year Students.*

Grammaire, *Larousse.* Article jusqu'aux participes. Exercises. Dictées, exemples, homonymes. Traduction from Evangeline (Longfellow.)

Littérature. Formation de la langue française. Troubadours. Poètes. Lorris, Jean de Meung, Charles d'Orléans, Villon.

Historiographes. Villehardouin, Joinville, Froissart, Christine de Pisan [Chartier.] Origine du théâtre. Confrère de la Passion. Clercs de la Basoche. Enfants Sans-soucis. Renaissance. Marot. Bellay. Ronsard. Malherbe. Rabelais. Montaigne. Calvin. Hôtel de Rambouillet. Vangelas. Académie française 1635.

Histoire. Gaule 50 avant J.C. jusqu'à la VII.iéme Croisade St. Louis 1270.

Lecture. "L'Avare." "Les Précieuses ridicules." "Baron Fourchevieff." "Voyage Perrichon." "Le Cid." "Athalie," 2 leçons de Gouin par semaine. 7 chansons.

Exercices de Prononciation. Règles de prononciation.

SENIORS.—*Second-year Students.*

Grammaire emploi des temps. Analyse logique. Idiomes.

Littérature. XVII. Siècle, jusqu'à Voltaire. Rousseau.

Histoire. 1328 jusqu'à la Révolution et Napoléon 1815.

Lecture. "Andromaque." "Hernani." Ruy-Blas, "Vie de Napoléon." "Tartufe."

Traduction from "The Lady of the Lake" and "The Merchant of Venice."

Gouin. Méthode avancée. Leçon d'assai par les élèves: 3 leçons chacune.

Grammaire. La Maîtresse explique chaque règle de grammaire, les élèves répètent et font des exercices sur les règles. Littérature, la maîtresse raconte la vie d'un poète, les élèves racontent, puis écrivent, une élève dictant. Histoire, même méthode suivie.

Lecture. Chaque élève lit à tour de rôle. 2 fois par année, examens par écrit.

German.

First Year.—1 hour Gouin; 1 hour grammar. Grammar varied by teaching a piece of poetry in a method approaching the Gouin.

Second Year.—3 hours a week. 1 hour Literature. 1 hour Translation into German of passages from Literature.

Reading: (*a*) *Higher Division*, Reading classic. "Undine" and "Faust."

(*b*) *Lower Division*, half-hour grammar; half-hour easy translation. Last year Schiller's "Glocke" and "Deutsche Kleinstadter" (Kotzebne.)

Italian.

First Year. 1¾ hours a week; 1 hour Gouin, ¾ hour grammar. (*Perini.*)

Second Year: 2¾ hours a week. 1 hour reading and translation "I Miei Prigioni"; 1¾ hours Gouin and grammar to end of Lesson xxvii. in *Perini.*

An extract from the Report of our Inspector (formerly one of H.M. Chief Inspectors of Schools) will give an idea of results. "On my arrival on the evening of October 28th I was a spectator of an amusing French play performed by the junior students in which good accent was combined with an evident at-homeness in French conversation. . . . All the staff gave model lessons before me; those in modern languages by Mdlle. Mottu and Fräulein Diez. A passage from "Richard II." was translated into French by means of the Gouin method, while the students also showed their facility in French by translating another passage by themselves. Fräulein Diez caused her class to translate a short anecdote from Italian into German, first literally and then into idiomatic phrase and proper German order. Both these lessons were genuinely stimulating and at the same time thoroughly enjoyable."

C. M. MASON.

House of Education,
Ambleside.

The Rule of Three.

I UNDERSTAND that arithmetic is an art, the object of which is to attain certain results in the surest and quickest way. If so, there is something to be said in favour of the "old-fashioned" rule of three as against the newer "unitary" method. I need not occupy space with demonstrating this. The waste of time

and figures in the unitary method is increasingly obvious when we contemplate a sum in "compound proportion," or, as I have lately seen, a schoolgirl floundering on these principles through simple problems in "stocks and shares." Arithmetic is also a science, training in which is useful for the development of mental faculties. I maintain that there is more thinking required in a child to state the three terms of a "rule of three" than in the mechanical devices of the "unitary" method. If it is objected that the child does not in this way see the *raison d'être* of the method, I reply that neither does he in the "unitary" way. One way is, *to him*, as arbitrary as the other. And, secondly, the reasons for this, as for so many processes in arithmetic, are not apprehensible either in arithmetic or by the child till he is old enough to understand it in the course of his algebra.

X. Y. Z.

The Teaching of Modern Languages.

There are other reasons than those suggested by Mr. S. A. Richards for retaining the old method of teaching modern languages, though not necessarily to the exclusion of the new methods. Bacon taught us long ago that, while "Conference maketh a ready man, writing maketh an exact man," or, in Latin, "*Scriptio autem et notarum collecti, perlecta in animo imprimit et altius figit.*" How is the pupil to learn how to *write* the plurals of nouns in French with *-x* or *-s*, for example, except by learning rules? How is he to fix these things deeply in the mind except by writing exercises? Are not modern languages written as well as spoken? It seems to me, from what I can learn of the new methods, that they are just the conversation lessons exaggerated to the exclusion of the other and equally necessary methods of instruction.

A Retired Schoolmaster.

MUTUAL AID.

The object of this column is to afford teachers the opportunity of asking questions of and giving assistance to colleagues. The questions received to which replies are solicited will be printed first; following these will be the answers which have been sent in, and, to make such replies intelligible to all readers, they will be accompanied by the question.

The questions should deal only with educational matters, using the expression in a broad sense, and the publication or otherwise of any question must be left entirely to the discretion of the Editors.

Questions and answers should be addressed to the Editors of The School World, St. Martin's Street, London, W.C., and should be accompanied by the full name and address of the sender, though not necessarily for publication. Each question or answer should be on one side only of a separate sheet of paper.

Questions.

M. R. B. Can anyone name and give price and publisher of "Admission Registers for Private Schools" that have adequate space for recording details of admission, leaving, progress and future work of pupils?

E. F. S. Can any reader inform me from what poem the following is a quotation:

"Oh! fret not after Knowledge,
I have none, and yet the evening listens."

E. Kenny, Ursuline Convent, Waterford, would be glad to receive the opinions of teachers in secondary schools as to the advisability of rewarding successful pupils by giving them money prizes.

T. S. (i.) In a series of handbooks entitled, if I remember aright, "Handbooks of Social Questions," is one on Education, and dealing with legal points affecting master and pupil, income-tax, assessment on school buildings, &c. By whc published, and at what price?

(ii.) Are the Irish Statutes of Charles I. procurable as (ment publications? If not, how may they be obtained?

K. C. (i.) Is there any good book of *examples* on Geor Drawing? Most of the books I have seen have few ex and though, of course, one can invent them for onese more simple to have them already made up.

(ii.) Has any cheap book been published of illustrat logic—syllogisms and fallacious arguments principally?

G. Hammam, Beirut, Syria. Wanted:—(i.) The na two or three books on the General History of Education.

(ii.) Good and full information of those who have att to solve the problem of inscribing a heptagon in a circle.

(iii.) Any general rule for the divisibility of a num a prime number. Where can I find the rule with the pr

(iv.) The best book on Masonry, giving full info about foundations, structure, planning, mortars, &c.

(v.) Is there a key to the exercises in Mackey's Euclid

A. L. Is there a reasonably cheap edition of the letters, or of selections from them?

Questions with Answers.

T. S. *Is it possible to obtain a verbatim (official) r the proceedings of one or more sections of the British tion without purchasing the reports of all sections? If s say where obtainable and at what price. What is the co publication containing the reports of the proceedings of all of the Association?*

R. A. G. No verbatim reports are published of t ceedings of the sections of the British Association. articles upon the chief subjects brought before each appear in *Nature* shortly after each meeting of the Asso Presidential addresses, abstracts of papers brought bef sections with the reports of committees, and a few s papers, are printed in the annual report, but no account i of discussions. Every member of the Association, annual subscription of two guineas, receives a copy report. Mr. John Murray is the publisher of the repo the price to non-members is 24s. The address of the A tion is Burlington House, Piccadilly, W.

K.C. *Is there any book of examples published on the the new Army Examination in Mathematics?*

S. T. A. "Mathematical Papers for Army Classes." Brabant. (Relfe.) 1s. 6d., or with answers 2s. 6d., wil useful.

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Do not fail to direct especial attention to these details, leading the udent continually away from his physical environment. Frequently k him to point to distant landmarks. (Note that he places his hand tirely behind the stereograph and points away into the distance.)

Make use of every device for keeping the student's face *in the hood.* he only reason for removing his eyes from the stereograph during his ntemplation of it should be to do the blackboard or notebook work hich may be required of him, and which should be kept at a minimum quantity.

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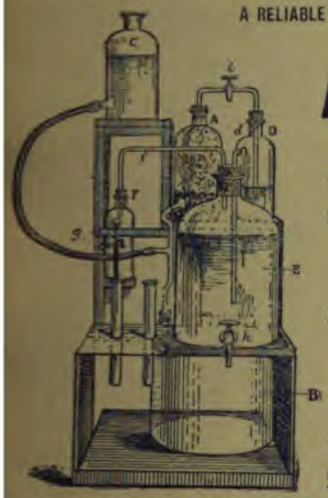

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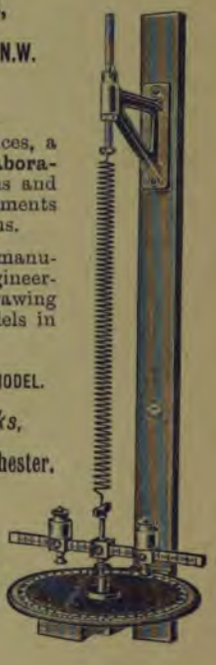

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By J. W. ADAMSON, B.A.
Professor of Education, King's College, London.

S the most recent Education Acts prove, legislators and administrators now admit that schoolmasters need a specific preparaı for their office. But, though the soundness of : contention is so far admitted, there is no ıeral agreement as to ways and means; the ıase, "training of teachers," is very variously erpreted by public men, and some of the surıing opposition to training is based upon one or ıer of their commonly mistaken interpretations. is therefore necessary to state in what sense the rds are used here.

The man who proposes to enter the profession teaching should be, first, educated, and, secondly, ined to teach; a truism, or so one would like to ard it. The standard of education for the ondary school teacher is prescribed by the gistration Regulations; expressed summarily, se indicate the completion of the first half of a ree course as the minimum. The standards for chers in public elementary schools are various; , since we may assume that the new London thority will follow the practice of the School ard and employ only fully-certificated teachers, e Board of Education's certificate may be arded here as the minimum educational qualifiion. This certificate represents, according to umstances, an "English education," fairly good far as it goes, with a foreign language or a nch of science in addition, or a degree-course olly or partially completed. The number of ndon elementary teachers who graduate will, ler the coming *régime*, no doubt be greatly reased; consequently, the standard of general ıcation demanded from the London secondary cher will not remain at the minimum of the gistration Regulations.

"Trained to teach" means having passed under npetent direction through a course of study of : principles of education combined with practice the art of teaching; theory and practice are :h essential. The phrase is not always so underod. Passing by the opinion that he is trained teach who is himself thoroughly instructed, there are those who believe that the study of theory constitutes a teacher's training, and, again, those who read the phrase "trained teacher" in the sense of "finished" or "accomplished" teacher. Whether the study of educational principles is a philosophic discipline fittingly recognised by inclusion in a degree course is not the question; teaching is an art, and those very principles assure us that arts must be attained by practice. It is a misuse of words to describe the mere student of theory, be it ever so philosophical, as trained. A man may possess a thorough knowledge of the theory of projectiles, and of the chemistry and dynamics of a powder explosion; but no one would therefore call him a trained gunner. On the other hand, the skill which marks the accomplished teacher is only to be acquired from long experience in the schoolroom; in the most favourable circumstances the training period is but short, and at its conclusion the student, compared with the accomplished artist, is still raw.

But practice in the schoolroom amidst ordinary school children, when judiciously devised, directed and criticised, will enable the average man to recognise the teacher's essential problems and to develop power in dealing with them; and the study of theory, pursued concurrently with such practice, bestows an interest and an insight which abbreviate the student's period of "learning by experience." It is in this sense that the novice is said, in due time, to be trained.

The education and training are both accomplished best when pursued, not concurrently as in the elementary training college, but separately, education coming first. If the practical part of the training is to deserve the name, it will require time, as will certain auxiliary arts, such as blackboard drawing and voice-management, which are well-nigh indispensable to the teacher. If the time be subtracted from time due to education in the non-professional sense, that education must suffer; a day obstinately refuses to contain more than twenty-four hours. The loss is one which the teacher cannot afford, since knowledge and culture are even more necessary to him than to the layman.

Provision for training the secondary teacher is the more urgent, while his need is in danger of being overlooked. The whole charge in respect of training, both elementary and secondary, is thrown

by the Act on the *secondary* fund; the secondary school being the Cinderella of English educational administration, the consequence is likely to follow in London (as already in some adjacent counties) that measures for training secondary teachers will be postponed till all like claims in favour of their *confrères* are met, that is, till about the Greek kalends. It is significant that while estimates have appeared of the number of additional trained elementary teachers required yearly by London, no serious calculation seems to have been undertaken on behalf of the others.

It must be remembered that the problem of training teachers, as distinct from educating them, has only been seriously considered during the past few years; it is still, in fact, in a more or less experimental stage. But, if foreign experience be added to our own, there would appear to be some three or four different modes of conducting it. First may be named the training college, for those whose education satisfies the minimum of the registration regulations; the tendency will most probably be to require a university degree from all London secondary teachers, save in certain well-defined and exceptional cases. The training college course, occupying one year, comprises the study of the scientific principles of education and their practical development, the history of educational opinion and practice, and practical training in a school, or schools. We already have such training colleges in London, for women chiefly; the provision for men may meet the existing demand, but, measured by the community's advantage, that demand ought to be considerably increased.

The "college" may be an independent institution or a department of a place of learning which carries on educational work of many kinds. The dislike of the seminary is a national trait which sometimes amounts to no more than a prejudice; still, few will deny the advantage even to persons learning a profession, when their instruction is gained in partial association with other members of a great society. Still more to the point is it that in such places the *teachers* of the students of education gain in comprehensiveness of view and breadth of sympathy by daily contact with other teachers, who necessarily regard questions of principle and of method from different coigns of vantage. In "London Education," Mr. Sidney Webb makes fun effectively of the belief that "the advancement of learning depends on the subtle intellectual stimulus gained . . . by the interchange of the lore of the scholar of Arabic with the facts of the student of chemistry" (p. 59), but the staff of a great college are frequently compelled to hammer out in concert working schemes which include in their purview matter as distantly related even as Arabic and chemistry, and in the process orientalist and chemist have opportunity to learn from each other. The instinct is, therefore, a healthy one which is moving all the secondary training colleges in London to seek organic connection with the university.

It is often suggested that primary and secondary teachers should receive their training in common; certain persons affect to believe (in the face of easily ascertained facts, it cannot be much more than affectation) that *all* training is merely indoctrinating the trained with

> "German primary class rules
> Fitted for English secondary schools."

Much that is fundamental to all education may be taught simultaneously to both classes of students, provided all are sufficiently educated to appreciate the matter taught; many questions of method and the most elementary facts respecting the maintenance of control and "good order" may be elucidated with profit to both sets of students in circumstances most allied to elementary school conditions. But the elementary school deals with children whose age on paper does not exceed fourteen, while, in fact, the limit is appreciably less; the secondary school pupil may be seventeen or nineteen years of age. The facts mean differences in circumstances, possibilities and ideals which make one and the same practical training (and, as a consequence, the same treatment in theory) impracticable for both in all respects. The secondary training college must have its secondary practising schools, the primary its primary; and a staff which is sufficient for either set of students alone would be insufficient when the sets are combined—where combination is possible and desirable.

But the college is not the only agency where the secondary teacher may be trained. Some of the greater London schools also might undertake the professional instruction of some half-a-dozen *graduates*, with advantage to the public and without prejudice to themselves. The thing is done in many German schools of a rank with which the London schools should not think it derogatory to be compared. It is a ludicrous misstatement to the case to say, as was said recently, that "even in Germany, practice" (in a secondary school) "can only be obtained upon a low class and on the parental condition of a free education." On the contrary, Seminars are attached to some of the best-known gymnasien in Prussia and in Germany generally. Such are selected precisely because they are well-equipped, well-staffed, thoroughly efficient places of education, where the paid services of the headmaster and a colleague are available to direct the professional study, theoretical and practical, of the four, six or eight university graduates sent to them for the purpose.

Formerly the Prussian secondary teacher, after completing his university studies and passing the State examination for schoolmasters, served a year's probation in a school before he obtained a definitive engagement; during the probationary period his *status* was much the same as that denoted by our own term, "student-teacher." After a trial lasting some seventy years, this arrangement was deemed unsatisfactory, and in 1890 the seminar system was introduced, in order to ensure for the novice a year's study of theory and practice jointly (a true "training," in short)

between the close of his university course and the probationary year which is still exacted.

In the seminar, the young graduates work through a course in the theory of education which is illustrated and enforced in the lessons they attend, by those which they themselves give, with criticism to follow, and by the daily life of the school in which they share. Independent evidence shows that the plan confers great advantages to the students, while causing no detriment of moment to the school; and the evidence is corroborated by the fact that the German Empire in general has followed Prussia's lead.

The essentials are a good school with sufficient variety of work and pupils numerous enough to allow scope for continuous work by the students; above all, a headmaster and a senior colleague, or two senior masters, with leisure between them to undertake the supervision of the students' practice and the direction of their reading. More than a few London secondary schools could compass these things; the extra remuneration of the two teachers and provision for a larger school staff might be met out of the fees of the students and a subvention from the Education Authority, which would thus secure an efficient and inexpensive mode of training.

For the moment it may be necessary to accept forms of training less satisfactory than the training-college and the seminar. Schools of lower standing than those above mentioned, but competently qualified in staff, curriculum and premises, might be permitted to offer facilities for practice to student-teachers, for whose benefit the university might establish courses of pedagogical lectures in different parts of London. The consequent divorce of theory and practice is a weakness which stamps the plan conspicuously as makeshift; the lecturer might mitigate the evil by visiting the schools and seeing his hearers at work. The relation of the university to the study of education is a large question, however, which concerns many other subjects besides training.

Some Swiss cities train women for teaching by a system which may be described here, although it involves the radically unsound attempt to combine pedagogic instruction with education. The upper section of a large school (say, the studies of the last three or four years) is divided according to the future careers of the pupils; thus, there are divisions for general education, for commerce, for domestic management, for pedagogy. Girls who are to become teachers, or who, for various reasons, deem it advisable to follow a similar course, spend their last three or four years at school in the pedagogic division. During the first or first two of these years the studies are distinctly non-technical; in the last two years they are interspersed with lessons on pedagogy and some practice in teaching, either in a small practising department or in neighbouring primary schools.

Educational efficiency of a modest standard requires all London elementary schools to be staffed, as the board schools have been, by fully certificated teachers; it will, therefore, be necessary to increase the existing annual supply of trained elementary teachers by a number variously stated from five to nine hundred. To these some would add an unknown but much smaller number of primary teachers, chiefly women, for service in the lower forms of some secondary schools, whose education and training would be of a kind different from, though, for their work, not necessarily inferior to those of their colleagues in the upper forms.

Primary teachers of this second class would have completed their education before admission to the technical course, for which alone the Education Authority and the training-college would be responsible. We touch here upon a very necessary reform in the manner of preparing elementary teachers. At present the majority pursue, during a two years' course (the *élite* during a three years' course), a general education with which training is mingled, to the detriment of both, and with some perfunctoriness attaching to the technical instruction. Had it not been for the earlier empirical exercise in *technique* which most of the students had obtained as pupil-teachers, the utter insufficiency of their so-called training would have been more generally recognised. A large accession of recruits from the ranks of those who have had no previous experience of teaching, whether as pupil-teachers or otherwise, may be confidently expected in the very near future by the London training-colleges and whatever other agencies may be created to prepare teachers for work in London elementary schools. If the present system is maintained in the case of these persons, training in general will suffer wholly unmerited discredit when they pass to work for which they will have been but superficially made ready.

When candidates of satisfactory educational standing are forthcoming in sufficient numbers (and it rests with the teachers' paymasters to say when this shall be) they should receive strictly professional instruction only during one year's sojourn in the college. The expense of training all ranks of teachers will not be small, if seriously undertaken; the *secondary* fund will be terribly depleted, if it is to bear the charge not only of training all elementary teachers, but of educating them also.

In deciding how many persons shall be prepared annually within a given area for the office of schoolmaster it is not enough to count up the yearly waste. The number is strictly limited to those for whom schools are available in which to obtain the indispensable practice. It is all very well for two or three rural counties to unite in establishing a big college intended to meet their combined needs; they still have to find children in sufficient numbers to permit practice so conducted as not to interfere with a school's first and greatest duty, the education of its scholars. In the case of primary teachers, one hundred students should have access to seven or eight schools, or departments, of from 250 to 400 pupils each. The number of secondary schools per hundred students

would be very much greater, owing to smaller classes, a more complicated curriculum, and the needs of those who proposed to become teachers of special subjects. This is a point which must be insisted on betimes, or we shall suffer from the creation of big, ineffective institutions placed where they will be crippled from the outset. A training college which contained so many students that it could not find enough pupils for practice would be as useful for its special purpose as a medical school in the Hebrides.

Where long-established agencies are already at work, the over-preponderance of any large, centrally administered institution would constitute yet another danger. As was said above, training is in the experimental stage; we are a long way from the point (if there be such) at which the preparation of the teacher can be profitably stereotyped. There is ample room, or rather there is every reason to encourage different modes of training; the predominance of any one form should not be allowed to stifle vitality in the others. In London, the number of colleges and other training agencies must be increased to meet the imminent increase in the demand for teachers; but existing institutions should be developed to the full by the Education Authority, whatever is wanting either in staff or *matériel* being supplied, so as to bring all to the highest efficiency of which they are capable. Such a policy is not only the less costly; it preserves, as a London asset, the experience, the initiative and the traditions which these institutions embody.

When all is said, it remains that the greatest hindrance to training may be swept away directly the Londoner, as ratepayer, taxpayer or parent, understands that he does not pay a reasonably fair salary to the majority of assistant-masters and mistresses in secondary schools. Capable men and women will be ready to prepare themselves, at sacrifices of time and money, for his service, when he pays them as he should. He knows that as a matter of business good work looks for good pay; whether he realises it or not, he needs some very good work in the schools, and the Education Authority of London should make the fact and its implication clear to him.

The third edition of the *Guide to the Best Historical Novels and Tales*, by Jonathan Nield—xvi. + 235 pp. (Elkin Mathews), 4*s.* net—is so much altered that it calls for treatment as a new book rather than the mere chronicling of the appearance of a new edition. Mr. Nield's first edition was far better than any previous work of the kind; his second edition contained indexes that at least doubled the value of the book as a work of reference; and this third edition has been so entirely recast, improved, extended and cheapened as to bring it within a measurable degree of bibliographical perfection. We lack the space to set out the new features here; but any one interested can readily obtain a good idea of them by writing to the publisher for prospectus. We recommend his work very heartily to our readers. The completeness, variety and accuracy of its contents make it quite indispensable to teachers and students of history, to the keepers of school and other libraries, and to lovers of *belles lettres* generally.

THE TEACHING OF ENGLISH.

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OUR so-called teaching of English seems often to be directed not to the mastery of the language to be used, but to the glorification of grammar. But English grammar is not a thing to be glorified. The syntax is simple, the grammatical inflexions are very few. The tendency in language is to drop elaborate grammatical forms. An English boy, at any rate if he is the son of educated parents, makes few mistakes in grammar. Why, then, should he devote much time to the study of it? It would seem that those who teach English, having themselves been brought up on Latin and Greek, ancient languages overburdened with grammatical machinery, have assumed that English grammar must be equally important. Hence much time must be set apart for the study of it, and this time must somehow be filled up. But there are few irregular verbs which the boy does not already know, the substantives and adjectives are very amenable, the prepositions all govern the same case, the syntax gives but little trouble. How, then, occupy the long hours? The compound sentence comes to fill the gap. Now, it would be foolish to belittle the importance of understanding the compound sentence. It involves an understanding of the parts of speech, of the inherent difference between substantive, adjective, verb, adverb. It involves a grasp of the fact that clauses are substantives, adjectives, or adverbs, and that a compound sentence is, in fact, a simple sentence with clauses for its words. No one can know much of language unless he realises this. But the realisation of this is not all that in many cases is demanded of the boy learner. He is set day after day to analyse the compound sentence; and this is, I maintain, to make a fetish of it. When enough analysis has been done to ensure a grasp of the principle, the subject may be dropped for a time and recurred to occasionally. The object of language (*pace* Talleyrand) is to communicate thought. It is a piece of practical mechanism of which a boy must learn the use. If he knows only the grammar, he is in the position of a cab-driver who understands the anatomy of his horse, but does not know how to drive.

If we are agreed that the important thing is to be able to write and speak English well, how is the object to be attained? It goes without saying that there must be much essay-writing. This presents a difficulty, since it is hard to find subjects when the writer is very ignorant. But, then, essays need not all take the form of discussions, of propositions argued out. They may be descriptions of objects and scenes with which all the boys in the form are familiar: questions on history recently read, if they demand the marshalling of facts, afford very good practice. But the writing of essays is not by itself enough. It is often the making of bricks without straw and without clay.

A conversation with an average boy of fifteen, or a letter written by him (still more an essay), would soon make this clear. He has a most meagre vocabulary. He resorts perpetually to slang, not so much because he prefers it as because his "King's English" fails him at need. Here, then, we have got at the main difficulty. He has no vocabulary. When he reads a book, unless it be a tale of adventure told in very simple language, a good many of the words are only hazily intelligible to him. He is quite incapable of using them himself. What he needs is not so much to learn grammar as to increase his stock of ideas and words by which to express them. A word gained is often an idea gained. For a word is a crystallised idea, and that an enlargement of vocabulary ought to mean a gain in power of thought. This is true not only of words that embody comparatively difficult ideas, such as *subjective* and *objective*, but also of words which a boy might learn, *e.g.*, from reading Macaulay's "Clive," such as *virulent*, *preponderating*, *connivance*, *monopoly*, *cashiered*, *ballot*, *grotesque*, *petrified*. If he already has the idea in his mind, but a vague and misty, it becomes more definite and clear- cut by the acquisition of a word to express it.

How, then, is a vocabulary to be acquired? Clearly it cannot be without much reading, but careful and attentive reading is wanted. When a boy has read a novel, he is often vague about the names of the characters. "There is a chap, and another chap, I can't remember their names." To concentrate the attention on the points required, all unessential words should be underlined. The interest in the subject may naturally make the reader unwilling to pause over a particular word if he misses the general sense, but the mere underlining will not hinder him. He can return afterwards to the word and study it in its context. If further explanation is wanted, he can refer to a dictionary. This method can be followed with a class. They should be given a book to read, *e.g.*, Seeley's "Expansion of England," a short biography, one of Macaulay's Essays. They may read it out of school, or in part of the time allowed in school, or partly one, partly the other. They should underline, each boy for himself, all the words strange to them which they would have difficulty in using for themselves. As a result of their reading they should be able, in the first place, to answer questions on the matter of what they have been reading. To understand what one reads is the important thing of all. If grown-up people are asked to give some account of the line of argument in some magazine article, instead of merely saying "you really ought to read it," the revelations of ignorance are often astonishing. The boy reader, then, must show by his answers that he has a grasp of the subject and can put the facts together in their proper sequence. It is highly important that he should get his hand on a variety of books, that he should read out of school as well as in school, and that, to encourage him to this, his school hours should be cut down to reasonable limits. But, besides showing knowledge of the subject matter, the young student of English should, since he is trying to gain a vocabulary, be called upon to put into sentences, in such a way as to bring out the meaning, many of the difficult words that occur in the book. Much of this may be done orally, the class criticising the various sentences produced.

This method—the reading of books, the study of their words and their matter—seems simple enough, and, I think, ought to commend itself to those who have to teach English, but it does not work in well with the prevailing practice of giving half-an-hour or an hour to the preparation of a lesson and half-an-hour or an hour to the hearing of it. This snippety way of doing things is altogether ill-adapted to the teaching of English to English boys, though suitable enough for a Xenophon lesson of ten lines, every one of which bristles with difficulties. The master, with his English class, considers himself bound to go on asking questions during the allotted time; he has often exhausted the sensible ones before the hour is up, and has to fall back on a residuum of foolish ones, questions on such futilities as Anglo-Saxon derivations, or else on utterly irrelevant matter. The method I propose throws a boy more on his own resources, an excellent thing for him. But, of course, he ought to have an English dictionary at his service. Did not Euclid show his wisdom by prefixing to his Geometry a glossary of all the important terms used?

A boy has to be taught to speak his mother tongue as well as to write it. It is good, with this in view, to make him answer not with single words but with sentences. But, after all, in form most of the talking must fall upon the master. If, however, the form is occasionally converted into a debating society with the master for chairman, the boys have more of an innings, and may learn the difficult art of retaining ideas and coherency of speech when standing and facing an assembly. The finding of subjects is not very easy, but there are not a few good ones, *e.g.*, conscription, boarding schools and day schools, the desirability of a railway tunnel between England and France, the comparative merits of cricket and football. Many of the speeches will consist of a couple of sentences only, after which the orator will be emptied for the time of all his ideas. But some remark of another speaker will stimulate him, and he will wish again to mount the rostrum.

It remains to consider what, from our present point of view, is lost by those who know nothing of Greek. Certainly there are many scientific words and some that have won their way into ordinary English which present an increasing difficulty now that Greek as an educational subject is dying. I believe that a good deal may be done by collecting into groups words of Greek origin which are built up partly of common materials, so that the meaning of the common part may become apparent; such words as polyanthus, polygon, polygamy; anarchy, agnostic, anaemic; monarch, monocycle, monogamy, monotonous; orthodoxy, heterodoxy, paradox. As for learning Greek for the sake of knowing the meaning of a hundred or more English words, that is like studying thorough-

bass in order that you may be able to play the whistle-pipe. Greek, as an educational subject, has great merits, but to learn it solely as a stepping-stone to an English vocabulary is too foolish. The English words of Greek origin do not, after all, present any tremendous difficulty. The main thing is that there should be much reading of English books with a view to master both the subject-matter and the words, that there should be essay writing in plenty (I would add *précis* writing), and to a less extent the making of speeches, however lame and brief. This method will, I believe, put an end to the idleness of "English" classes, stimulate boys to effort and help them to master that glorious mother-tongue which is a thousand times more important to them than any foreign language whether ancient or modern.

INTRODUCTORY WORK IN MECHANICS.

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THE following article gives an account of a simple method which has been found useful for introductory work in mechanics. The aim is to familiarise boys practically with the analysis of motion, so that velocity and acceleration become to them realities, not merely words. Sound ideas of force naturally follow.

A trolley is constructed by mounting a strip of board (say 3 ft. by 3 in.) on two pairs of wheels. A strip of drawing paper is pinned down to this. A paint brush is wired on to a slip of steel (2 ft. to 2½ ft. long), clamped at one end in such a way that the whole length of the trolley can be drawn under the brush while it is vibrating transversely to the motion of the trolley. In our apparatus the brush makes from five to eight vibrations a second, according to the point at which the rod is clamped.

In the first instance, the trolley is drawn under the brush arbitrarily by hand, so that generally a more or less irregular wave curve is obtained. The distances between successive crests are of course described in equal times. After the method of making the curves has been shown each boy is supplied with one (prepared beforehand) and left to measure up the distances and plot the resulting distance-time graph.

The meaning of the varying slope of the graph is then considered, and the principle established that the gradient (tangent of the angle of slope) gives the speed.

Boys then deduce the speed-time graph, and in the same way the acceleration-time graph. There are difficulties of units that have to be carefully considered in passing from one graph to the next.

To establish the principle that the area of the speed-graph represents the space described, it is as well to plot the spaces as areas (rectangles whose base is the time) taking first, say, two intervals at a time, then single intervals, then half intervals, so that the gradual approximation of the broken rectangular outline to the curve of the speed-graph becomes manifest.

When in this fashion the meaning of the terms "speed" and "acceleration" has been got hold of, with the interpretation of the graphs, one can, with advantage, begin to proceed to consider the cause of motion.

Instead of drawing the trolley by hand, let it be drawn by a falling weight (our trolley weighs about 400 grams; a 50-gram weight gives suitable results). The resulting curves are examined by boys as before, but this time, of course, the speed-graph comes approximately straight. It is necessary to explain how in this case the first and second differences of the original spaces give the speed and acceleration, so that in future observations of this kind the labour of plotting the graphs may be avoided.

It is interesting to note that the irregularities that appear in the acceleration set boys asking the reason and making suggestions to account for them.

Next, the load on the trolley is varied, and the accelerations produced by the same falling weight observed. To get satisfactory results it is necessary first to find the weight which is required in each case just to maintain motion. To illustrate I give a set of actual results :—

I.

Trolley .. .. .. 407 gr.
Pulling weight.. .. 50 ,,
Resistance balanced by 4 ,,

Distance	Speed.	Acceleration.
0	—	—
35	35	—
82·5	47·5	12·5
143	60·5	12·5
214·2	71·2	10·7
298·3	84·1	12·9
394	95·7	11·6
503	109	13·3
	Average	12·4

II.

Trolley + load .. 807 gr.
Pulling weight .. 50 ,,
To balance resistance 8 ,,

Distance.	Speed.	Acceleration.
0	—	—
17	17	7·3
41·3	24·3	197½
—	—	
110	—	
154	44	
205	51	7
262	57	6
325·2	63·2	6·2
395·7	70·5	7·3
473·2	77·5	7·0
	Average	6·7

Comparison of results $\frac{461}{865} = 0{\cdot}535$. $\frac{6{\cdot}7}{12{\cdot}4} = 0{\cdot}540$.

I.e., the acceleration is inversely proportional to the mass.

In this way it is shown that not acceleration alone, but mass acceleration is a reasonable quantity to take as the measure of "change of motion." This is supplemented and enforced by collision (ballistic pendulum) experiments showing that when bodies collide it is their changes of momentum (not of velocity) which are equal and opposite. Thus the way is prepared for the appreciation and acceptance of the law, "action and reaction are equal and opposite," when by "action" is understood change or rate of change of momentum.

All the familiar difficulties of detail remain. To the end of time boys will make careless mistakes about units, will use and solve equations incorrectly,

on; but we find that this simple experi-
dealing with the subject leads to thorough
nding of principles and greatly facilitates
. It is not work that should be hurried:
ust be left time to realise what they are
the ideas must grow, not be forcibly im-

ce that this method of presenting laws
III. leads to an interesting treatment of
f mass not hitherto familiar to me.
body consisting of two particles m m_1
the particles have mass accelerations
$m_1 r_1 \omega^2$ respectively towards the centre
ion. If the particles are subject only to
her's influence (whatever form the connec-
e) these are equal and opposite. Hence
re of rotation is in the line joining the
, and is determined uniquely by the rela-
$= m_1 r_1$. The extension to any number of
is of course quite simple. This seems to
tter way of treating centre of mass than
ually adopted, which is in fact merely
tute the term centre of mass (an accurate
on) for centre of gravity (approximate only)
any real explanation of the change of view.
mplete this line of thought, "moments"
e treated in the same way. Just as it
n shown (approximately) that change of
m is the suitable quantity to take account
sidering the mutual effect of bodies on one
s linear motion, so it should be shown that
of moment of momentum is the suitable
to notice in considering their mutual
rotational motion.
rdinary mathematical method of treating
, defining the measure of the moment of
r of a momentum, and then working out
equences of the definition, while of course
sound, is abstract and fails to bring home
ners the real meaning of the quantities
ch they are dealing.
llowing method of dealing with the matter
ore satisfactory.
(5′ × 2″) is mounted on a turn table (im-
out of the pedal of a bicycle) so that it
turn in a horizontal plane. At each end
of glass (12″ × 3″) glued on crosswise
he paper on which tracings are made. A
(2′ 6″) carrying a paint brush is clamped
so that when the lath rotates a trace is
on the glass. The trolley previously
d, travelling under a second vibrating
set in motion (by the blow of a hammer)
en against the lath. Examination of the
ces gives the speed of the trolley before
r impact and the angular velocity of the
ictly speaking of course the speed of its
y).
top of the next column is a set of actual
tions.
results show approximately that the
effect of the blow is proportional to the
of the momentum lost by the trolley.
fford, that is, a reasonable experimental
r the definition of moment of momentum,

Mass of Loaded Trolley 7¾ Hectograms.

	Speeds of Trolley.	Dist. of its line of motion from centre.	Loss of Moment of Momentum. MVr.	Angr. vel. of lath. ω.	MVr. / ω = K
1	66 / 23	43 ... 31 cm. ...	96 ...	63 ...	153
2	80 / 29	51 .. 31 ...	114 ...	72 ...	160
3	59 / 11	48 ... 22 ...	77 ...	52 ...	150
4	57 / 12	45 ... 22 ...	72 ...	49 ...	150
5	62 / 8	54 ... 15 ...	59 ...	42 ...	140
6	45 / −2	47 ... 15 ...	51 ...	36 ...	140
7	59 / 23	36 .. 39 ...	101 ...	67 ...	150
8	64 / 24	40 ... 39 ...	113 ...	72 ...	157
9	50 / 26	24 ... 54 ...	93 ...	55 ...	170
10	57 / 31	26 ... 54 ...	100 ...	63 ...	160

and for the assumption that in dealing with rotation "when two bodies act upon one another action and reaction are equal and opposite," when by action is understood change of moment of momentum.

To get a check upon this in another way and to throw light on the nature of the quantity K (the moment of inertia) the lath is loaded at various points and the experiments repeated. It would seem best to argue the matter out theoretically beforehand from the assumption already made and compare with experimental results afterwards.

If then a mass m be fixed to the lath at a distance a from the centre so that it is made to rotate with it with speed $a\omega$, a momentum $ma\omega$ is given to it. This causes reaction on the lath, and, according to our assumption, the proper measure of its effect on the rotation of the lath is its moment, viz., $ma\omega \times a$ backwards. The equation of motion then becomes

$$MVr - ma^2\omega = K\omega, \text{ or}$$
$$MVr = (K + ma^2)\,\omega.$$

I.e., the effect of the load is to increase the quantity K (the moment of inertia) by ma^2.

The following is an actual set of observations:

Mass of loaded trolley 725 grams.
Striking lath along a line 44 cm. from centre.
Lath loaded with two 500 gr. masses at varying distances from centre

Speeds of Trolley.	Loss of Moment of Momentum.	ω.	K.	Distance of 1,000 gr. load from centre.
63 / 16	... 150 ...	32 ...	470 ...	55 cm.
61 / 15	... 146 ...	33 ...	440 ...	50 cm.
67 / 22	... 143 ...	42 ...	340 ...	40 cm.
65 / 22	.. 137 ...	50 ...	270 ...	30 cm.
44 / 17	... 86 ...	37 ...	230 ...	20 cm.
36 / 19	... 63 ...	34 ...	185 ...	0 cm.

It is clear that the increase in the value of K is very closely proportional to the square of the distance of the load from the centre, as it was seen it should be if the assumption was correct.

It appears that by this method sound ideas of the physical meaning of the terms moment of inertia, angular momentum, moment of momentum, and therefore of moment of rate of change of momentum and moment of force, may be better obtained than by the usual purely abstract mathematical method. The whole subject, in fact, is put as it ought to be, on a kinematical, not on a statical basis.

THE NEW WAY OF TEACHING CLASSICS IN GERMANY.

By Cloudesley Brereton, M.A.
Licencié-ès-Lettres.

THE two burning questions of the day in secondary education are the adequate supply of properly qualified and properly paid assistant-teachers and the thinking out of suitable courses of study. Local authorities all over the country are being called on to decide on the particular type or types of school most appropriate to the needs of their district. Generally speaking, the wind is in favour of modernising the curricula. The advocates of little Latin and less Greek are more unlikely than ever to obtain a respectful hearing before the newly appointed representatives of Demos. But does this imply that Greek and even Latin are practically to be expelled from our smaller secondary schools? No doubt the old dull gerund-grinding methods of teaching classics to a majority of boys who would never reach the higher work has much to answer for, but are we then blindly to condemn the subject because the methods of teaching it were unsuitable? Certainly such a wholesale condemnation of classics, or, at least, of Latin, finds little sympathy among the mass of experts in France and Germany. They have indeed recognised that a first-rate education can be given on wholly modern lines. Thus, in Germany, the Realschule and Oberrealschule, though still unpossessed of some of the privileges attached to the older schools, have definitely become part and parcel of the Prussian educational system. The French, indeed, have gone still further, and have accorded to the new course they have just framed in modern languages and science absolutely the same privileges as are attached to the other three courses. Yet in neither country have the just claims of classics been sacrificed. In fact, their position, at least so far as France is concerned, has been placed on a more rational basis by giving parents a choice between a purely classical course and courses composed of Latin with science or of Latin with modern languages, in addition to the purely modern course mentioned above, and, what is still more important, the choice of a course, whether purely classical or otherwise, is postponed to a later date than has hitherto been the case, with the result that pupils of every category receive identically the same education up to the age of eleven or twelve instead of being compelled to specialise at the age of nine as heretofore. The later age at which classics or Latin are begun is compensated for by a preliminary grounding in modern languages and by an intensitive study of Latin and Greek once they are commenced. Unfortunately the experiment is as yet too recent to furnish us with any definite results, but it is highly significant that the French have such a belief in its efficacy that they have not hesitated to apply it to the whole country.

The authorities in Germany have been experimenting in a somewhat similar direction for a number of years. The first experiment was at Altona, where, as far back as 1878, a Realgymnasium was established in connection with a Realschule. A Realgymnasium is practically a Latin modern school which keeps boys till nineteen, as a Realschule is a modern school with no Latin whose pupils leave at sixteen. The three lowest classes are common to the two schools. As in France, the study of modern languages in these classes serves as a stepping stone to the study of Latin for those who enter the Realgymnasium. The pupils are thus enabled to postpone the choice between a Latin or entirely modern education till the age of twelve, whereas in the case of the old-fashioned Realgymnasium the decision had to be made when the pupil is nine. Again, as in France, leeway is made up by an intensive study of Latin once it is taken up. Several towns copied the example of Altona, and the celebrated conference on secondary education in 1890 in Berlin approved of a trial of the system where local needs rendered it desirable. The Altona experiment, however, dealt only with the postponement of Latin. A further experiment was made in 1892 in Frankfort-on-the-Main, when the Gymnasium (or full classical school) had its curriculum recast that its three lowest classes (or years) served as a common basis for a classical course or for a modern one in the Realschule, which in this case is not in the same building. At the same time the Realgymnasien in the town had the work of their three lower classes re-arranged to bring them into line with those of the local Gymnasium and the Realschule. In the case of the Gymnasium the experiment affected not merely the teaching of Latin, but also of Greek. In Gymnasien of the old style Greek is begun at the age of twelve, in Frankfort it is begun at the age of fourteen. The Frankfort scheme differs to some extent from that of Altona. There is a smaller number of Latin hours in the Frankfort Realgymnasium, and the time given to mathematics is less. The chief complaint against the Frankfort plan is that the bulk of the science is postponed till too late, while the Altona system is reproached with beginning English too early. The Frankfort scheme has been adopted by a still larger number of schools. A great impetus was given to the move

the favourable notice taken of it in the ree of 1900. The desire was expressed xperiment might be tried on a still larger ng to its success in meeting the needs of :y in which it had been tried. Schools had hitherto been unknown in Germany, l recently a poor district had to choose two types of schools when it really oth. The economy of combining two one has, no doubt, appealed powerfully ocalities. On October 16th, 1901 (the : for which statistics are available), the schools either existing or in process of on were 44 in Prussia and 18 in the rest ny, or a grand total of 62! Of these ore or less on the Frankfort plan, and erly 14) on the Altona system. The Ministry have been very chary of allow- ons of the two curricula, holding, as they hile the experiment has proved of value, too early to experiment with the experi-

nination of the total number of hours for course shows that the chief difference he old and new methods is that in the ied Gymnasien 68 hours are devoted 36 to Greek, and 20 to French; whereas, ', the hours are 51, 32, and 31-34 respec- a the old-fashioned Realgymnasien 43 given to Latin and 31 to French, against 36-40 respectively.

a recent visit to Germany to study the of history for the Board of Education, came across a couple of Gymnasien the new experiment is being conducted, gh the kindness of the headmaster was e present at several lessons. He then e or two Gymnasien of the older type, in istitute, as far as possible, a comparison he standards attained, and also to try some idea of the scope and aim of eaching in Germany, which, it is hardly to say, is not quite the same as that in

Accurate scholarship and linguistic probably be regarded as the chief aim al teaching in English schools. We find much attention paid to niceties of p, and a good deal of time devoted to the of composition. In Germany the chief s to be mastery of the language with a nake the language itself an element of ulture. Hence, while the pupils are y well grounded in the grammar and the language, the amount of composition o be considerably less. Thus, in one of nasien of the old type, the statement : that the pupils in the highest class only Greek compositions a term. Again, the art of the composition work consists of tion, more or less direct, into the Latin or Very seldom does the teacher set passages rman authors for re-translation. In fact, this has only just been again allowed in programme of 1902. Verse composition , though in one or two universities the professor makes the students turn Juvenal into Greek verse, or Greek poetry into Latin verse, and in others the study of metric, such as that of Plautus, is carried to a high pitch.

The absence of verse composition probably leads to less stress being laid on the correct learning of quantities, which are mainly taught to the pupils incidentally. The writer was told by one of the professors that Willamovitz-Möllendorf, the celebrated Greek scholar, would ignore the teaching of Greek accents. Whether true or not, it is an indication of the smaller importance attached to such things than one finds in England. The stress laid on the mastery of a certain number of authors naturally gives prominence to the translation side. All language teaching apparently begins with a reader or text-book. These are generally without those stumbling stones to knowledge—footnotes, and often without vocabularies, except in the beginners' classes. While cribs are forbidden, standard translations of poetic and dramatic authors are sometimes recommended in the highest classes.

The following is a brief account of one or two classes visited in the reform schools:

Obertertia (average age about 13½), 28 pupils, 10 hours a week (5 devoted to Lektüre, 3 to grammar, 1 to written exercises). The class had been doing Latin for a year and two terms, and had already read the first three books of Cæsar. They began by construing a difficult passage in *oratio obliqua* out of the first book, which they had not seen for a considerable time. The translation was accurate and fluent. Then, at my request, they took the first chapter of Book IV. unseen. Five pupils in all were put on from different parts of the class. The *modus operandi* was as follows: The pupil read a few lines in a clear and distinct voice, and then started translating literally with little or no hesitation. There was no guessing at the general meaning, but the translation throughout showed that the pupil had a sure grasp of the structure of the language. Only once did the teacher suggest what word should be taken. One has little doubt that the involutions and inversions of the German language rob the synthetic style of Latin of some of its difficulties for German boys. Yet the performance was certainly remarkable. The pupils' range of vocabulary, both in Latin and German, was equally striking. One boy translated straight off the reel the phrase "*ratio et usus belli*" as "*Theorie und Praxis des Krieges.*" There was, in fact, only one word (*invicem*) which they did not seem to have encountered before. Words like "*venationibus*" they at once derived from simpler forms they had already met with. The few grammar questions asked by the teacher were correctly answered. The class readily picked out and named a concessive ablative absolute, and after building up verbs like "*ventito*" out of "*venio*," described their function. Grammar, even in the grammar lessons, is taught as far as possible inductively. But the teacher is no slave to the system, and makes no bones of giving an explanation straight away when he sees there is

any danger of wasting too much time beating about the bush, or that the class cannot hit off the scent. A map of Gallia was hanging up in the class-room, and the geographical references in the lesson were located on it.

When the passage had been construed over, the pupils closed their books and the teacher proceeded to discuss the subject-matter of the passage, making a running analysis of the contents, and asking for Latin quotations, which were readily given, such as "*privati ac separati agri apud eos nihil est*," together with such questions as to why there was no fixed land tenure among the Suebi. One boy evoked much amusement by giving as a reason that the people wanted to know the neighbourhood, and therefore did not wish to stay in one place. An allusion to hunting led to a question on the fauna of Europe at the time. Finally the piece was done over by a pupil into good German. The liveliness, keenness and attentiveness of the class were beyond all praise.

Obertertia (second year in Latin). Thirty-three pupils. The class were doing a lesson in Ovid. In this case the teacher first translated, and the class did it over again. The Cæsar, however, is prepared at home. The special text-books in this and classics of the same standing elsewhere are furnished with vocabularies. There is also a special grammar. In order to help the pupils over the ground the grammars are made as short and concise as possible. Here again the translation was first literal and then idiomatic. Towards the end of the lesson the class recited and translated from memory the story of Cadmus.

The following rough notes of the top class in Latin in two Gymnasien (old style) will show the aim is much the same.

Oberprima (11 pupils). The lesson for the day was an analysis of a certain number of Horace's odes with discussions on the personages mentioned illustrated by quotations from other parts of Horace's works. The teacher's method the first time over is to go through the ode with the class, explaining the main difficulties. The pupils then prepare the ode at home. The same practice is adopted with the Germania, which the teacher considered very difficult, apparently owing to its allusions. A chapter of the Germania thus gone over in school takes the pupils about a quarter of an hour to prepare at home. The analysis was very clear, and the pupils showed a good knowledge of Horace. They had got a large number of the odes by heart. They not only analysed the ode, but also recited it with becoming effect. Gabbling is not tolerated.

Oberprima. Several odes of Horace were read and translated. The ode was either analysed by the pupil or the teacher talked it over with the class. The method of translation adopted was that of giving several strophes to a pupil to read over and translate. An improved translation would then be given by another pupil. Much time was spent on commenting on the contents. The teacher stated his chief purpose was to treat the odes as an illustration of the life and times of ancestors.

Here are the notes of two classes in Greek, the first in a reform school and the second in an old-fashioned Gymnasium.

Unter-secunda (seventeen boys). The lesson for the day was a translation lesson in Xenophon which had been prepared at home. One pupil read the passage through, some twenty lines of the Anabasis, not in a perfunctory fashion, but with due emphasis, as if he understood it. Then short portions were fluently translated by various boys. The teacher next asked certain questions in accidence and grammar arising out of the text. The answers were good, extraordinarily good when one reflects that the class had only been doing Greek for two-thirds of a year. It seemed all the more wonderful when one learnt that the grammar is mainly studied incidentally at first, only those portions being learnt which bear on some point which occurs in the text. In some schools the class begins with a reader, but in this class the pupils had started straight away with Xenophon. The teacher began by reading and translating to them the opening sentences, and they had a vocabulary to help them to make out the sense. The chief aim, as the teacher explained, is to lead the pupils, as soon as possible, to an intelligent reading of an author. He held, with the editor of the text in use, that the boys who begin Greek at an older age than the boy in the ordinary Gymnasium needed a different treatment from the latter, and, above all, required a more substantial fare than is provided by detached sentences, or even detached pieces. As for grammar, that can be largely learnt out of the Xenophon as one goes along. The editor of the text-book in question gives an excellent scheme of how such an idea may be carried out in practice. The composition in the class partly consists in the writing out of accidence and very simple re-translation, which is gradually varied. The extreme liveliness of the class, and the obvious interest they took in the work, were not the least striking features in a remarkable lesson.

Oberprima (eleven pupils). The author under study was Homer. The lesson began with an analysis by one of the pupils of the passage translated at the preceding lesson. Portions of the passage for the day were then read with becoming feeling and translated by other members of the class. The translation was fluent and good. There was a certain amount of literary comment which was mainly concerned with the subject-matter of the passage and the characters introduced. Grammar appeared to be mainly studied with a view to a just understanding of the language.

With such comparatively limited experience one would hesitate, in spite of the very large schools in which they occurred, to put them forward as samples of what is generally the case, were it not for the fact that the standard of attainment in the larger German schools is far more even than with us, and were they not, what is much more important, largely borne out by statements made at a meeting of the partisans of the

ools held at Cassel in October, 1901, attended not only by the heads of by inspectors and representatives of y. Many of the questions which must ave occurred to those who have read rough the present article were raised ing, and in nearly all cases a favourable s given. The obvious advantages at- arting Latin at 12 and Greek still later ttle alluded to. Much more was made that the later age at which they were far more in keeping with the pupils' spirit. What were difficulties to a boy not exist for a boy of 12, thanks no in part to the preliminary three years' n French. Teachers who had taught es were unanimous in testifying to the ess made by the pupils, which they partly to the intrinsic method (several at eight hours a week for a year were four hours a week for a period of two partly to the far greater interest shown ls. This keenness on the subject and et on were stated to be due to the fact pils "have clearly the feeling that they tly growing and are being carried along ontrast to the slow progress which they ide." The majority declared that over- s no worse under the new system than ld, though most admitted it was in both ious problem. The least contented be the teachers in modern languages ofessors of science and mathematics. appeared to consider they laboured at the classical teachers might enter abours, and, together with the science natical professors, complained of the allotted to them in the upper classes. nvinced of the need of grammar drill. ice of the direct method in modern howed itself in the advocacy of some in e spoken word in Latin. The question equate time devoted to ancient history mnasium and of an insufficiency of -books for the new method were also st interesting was the verdict of the ho had examined the first batch of oys for the leaving certificates. The ts were quite satisfactory. The Latin, actory, showed that the grammar re- le more attention.

e still, no doubt, other questions which een touched on in this short analysis. e mentioned here. What do the older k of the reform, and what do the Uni- ink of it? The Ministry, as we have remely favourable; so far as one could e other schools there seems to be an t the reforms may lead to over-pressure e weaker boys are drafted at times in a compulsory fashion into the Latinless . Both these contentions are hotly he partisans of the reforms. Even if legation be true, it would seem to be a right direction. The Universities have had several years' experience of students coming from the Reform Realgymnasien. For the last three years students have been coming in from the Reform Gymnasien too. Lack of time, unfortunately, prevented an inquiry into the opinion of the Universities on its new recruits. The subject is such an important one it seems worth the Board of Education's while to send to Germany some distinguished scholar well acquainted with the teaching of classics in England to make a thorough investigation into the whole matter. Doubtless we should not care to copy in all respects the German methods of teaching classics, yet it is quite possible we ought with advantage to enlarge our own methods of teaching. But the important question is, can we venture to defer, as the Germans have done, the teaching of classics to a later date? If so, judging by the German example, not only education, but classics also, will be the gainers. The classical side is less likely to be overweighted with an unnecessary *ballast* of non-linguistic pupils, while those who start the subject at the later date should bring to it an eagerness to learn and an interest in their own progress which are the very "*vivida vis*" of all true education, and are, unhappily, all too uncommon among the bulk of English classical pupils.

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NATURAL HISTORY.

By OSWALD H. LATTER, M.A.
Charterhouse.

(Reference Books are indicated by a *).

Botany.

"The Natural History of Plants." Kerner and Oliver. (Blackie.) 30s.

*"A Text Book of Botany." Strasburger and others. (Macmillan.) 18s.

*"An Elementary Text Book of Botany." S. H. Vines. (Swan Sonnenschein.) 9s.

"British Wild Flowers in relation to Insects." Lord Avebury. (Macmillan.) 4s. 6d.

Geology.

"Text Book of Geology." Geikie. 2 vols. (Macmillan.) 30s.

"Britain and the British Seas." Mackinder. (Heinemann.) 7s. 6d.

"The Scenery of England." Lord Avebury. (Macmillan.) 15s.

"Open-Air Studies in Geology." Cole. (Griffin.) 8s. 6d.

Zoology.

*"Text-Book of Zoology." Parker and Haswell. 2 vols. (Macmillan.) 36s.

[1] These lists were commenced in THE SCHOOL WORLD for February, 1904, and have been continued month by month.

"Zoology." Shipley and Macbride. (Cambridge Press.) 10s. 6d.
"The Royal Natural History." R. Lydekker. (Warne.) 36s.
*"Handbook of Physiology." Halliburton. (Murray.) 14s.
"The Formation of Vegetable Mould Through the Action of Earthworms." Darwin. (Murray.) 6s.
"The Natural History of Aquatic Insects." Miall. (Macmillan.) 3s. 6d.
"British Birds." Howard Saunders. (Gurney and Jackson.) 21s.

General and Biographical.

"The Origin of Species." Darwin. (Murray.) 2s. 6d., 12s.
"The Descent of Man." Darwin. (Murray.) 2s. 6d., 15s.
"Darwinism." Wallace. (Macmillan.) 9s.
"Island Life." Wallace. (Macmillan.) 6s.
"Life and Letters of C. Darwin." F. Darwin. (Murray.) 7s. 6d.
Life and Letters of T. H. Huxley." L. Huxley. (Macmillan.) 3 vols. 12s. net.
Collected Works of T. H. Huxley. Vols. II., VII., VIII. and IX. (Macmillan.) Each 4s. net.

HISTORIES OF PUBLIC SCHOOLS.

By J. Sargeaunt, M.A.
Westminster School.

"A History of Eton College." By H. C. Maxwell Lyte. (Macmillan.) 21s.
"Annals of Winchester College." By T. F. Kirby. (Frowde.) 15s.
"Annals of Westminster School." By John Sargeaunt. (Methuen.) 7s. 6d.
"Harrow." By J. Fischer Williams. (Bell.) 3s. 6d.
"History of Rugby School." By W. H. D. Rouse. (Duckworth.) 5s. net.
"Annals of Shrewsbury School." By G. W. Fisher. (Methuen.) 10s. 6d.
"Charterhouse, Old and New." By E. P. Eardley Wilmot and E. C. Streatfield. (Nimmo.) 12s. 6d.
"Annals of Christ's Hospital." By "A Blue." (Bemrose.) 10s. 6d.
"History of Tonbridge School." By S. Rivington. (Rivington.) 14s.
"A History of Marlborough College." By A. G. Bradley, A. C. Champneys, and J. W. Baines. (Murray.) 7s. 6d.

GENERAL WORKS OF REFERENCE.

By J. R. Broadhurst, M.A.
Manchester Grammar School.

"Greek Lexicon." Liddell and Scott. (Clarendon Press.) 36s.
"Latin Dictionary." Lewis and Short. (Clarendon Press.) 25s.
"Century Dictionary." Ed. Whitney. (Unwin.) 10s. 6d. per part.
"New English Dictionary." Murray. (Clarendon Press—not completed.)
"Encyclopædia Britannica."
"Dictionary of National Biography." (Smith, Elder.) 63 vols. 15s. per vol.
"Dictionary of Music and Musicians." (Macmillan.) 4 vols. £4 4s.
"Dictionnaire des Contemporains." Vapereau. (Hachette.)
"Dictionnaire de la langue française." Littré. (Paris.) 90s.
"Dictionary of Dates." Haydn. (Ward, Lock and Co.) 18s.
"Historical Atlas." Spruner. (Perthes, Gotha.)
"Nouvelle Géographie Universelle." E. Réclus. (Hachette, Paris.) 19 vols.
"Corpus Poetarum Latinorum." Postgate. (Bell.) (Not all published.) 5 parts. 9s. each.
"Royal Atlas of Modern Geography." Johnston. (Johnston, Edinburgh.) £6 6s.
"Poetae Scenici." Dindorf. (Parker.) 21s.
"Dictionary of Antiquities." Smith. (Murray.
"Dictionary of Antiquities." Rich. (Longmans.) 7s. 6d.
"Book of Days." Chambers. (Chambers.) 2 vols. 21s.
"Punch." First 50 vols. Bradbury and Evans ("Times.") £20.

NATIONAL SOCIETY OF FRENCH TEACHERS IN ENGLAND.

TWENTY-THREE years ago, a scheme to bring together the native teachers of French in English schools seemed a very bold one. The status of the subject itself was so low in those days, and members of the profession had so little knowledge of one another, that any joint action on their part appeared to be well nigh impossible. In fact, two attempts to form associations had been made a few years before, but such were the difficulties of the undertaking that the short-lived efforts were abandoned. In 1881, however, a few energetic men set to work with a will and founded the "Société Nationale des Professeurs de Français en Angleterre." Among them were MM. J. Bué, the father of the present master of French at Christ's Hospital; B. Petillean, and his son, George Petillean, of Charterhouse; A. P. Huguenet, Royal Naval College, Greenwich; H. Testard, who recently died at Greenwich; F. Jullien, King Edward's School, Birmingham; L. Melliet, who left the class-room at St. Andrew's to take his seat in the French Parliament; Q. Roche, le premier président; Alph. Mariette, Hamonet, Dupuis, Cassal, Chardenal, Marrot, Ragon, &c., who all of them have left their mark in the methods of teaching French in this country. By degrees a sufficient number of members was obtained; Victor Hugo, then in the zenith of his glory, accepted the honorary presidency of the Society, and a host of

men of letters on both sides of the Channel also gave their encouragement to the new departure.

The double object the new Society had in view was to promote the study of French as an educational subject as well as a useful attainment, and to give relief to its members when necessary. As an increased membership developed the financial possibilities of the Society, this two-fold plan was gradually carried out.

The first work of the Society was in the direction of free lectures in French, and the main difficulty was originally to find a public willing to hear Frenchmen speak in their own language about their own literature and art. The early attempts were not always successful, even when M. Blouët (Max O'Rell), and Madame Thénard, of the Comédie Française, or other well-known members, were to address the audience. The difficulty, however, gradually became to find a room with sufficient accommodation for the increasing number of eager listeners; and this continued until the day when the Council of the College of Preceptors kindly lent their hall for these lectures. The lectures, being intended for a general English public, avoid technical questions; they are usually devoted to historical, literary or social subjects, and are given by various members about twice a month during term time.

Professional questions are reserved for the conferences, of which two have been held in London, one at Oxford, and others at Cambridge, Harrow, etc. The last congress met at Reading, where the members and other visitors enjoyed the hospitality of the College and Borough authorities. The French Ambassador opened the proceedings on the first day, and Mr. Mackinder took the chair. The usual subject of the papers and discussions is the criticism of school methods of instruction in French, the teaching of French in the Universities, and the introduction of oral tests in all public examinations.

The Review *Le Français*, published monthly by the Society, is also of a professional nature. Its "Notes and Queries" are intended to solve the difficulties of both teachers and students, and most of the articles are devoted to the discussion of methods—old and new. Among subjects which have been discussed in the Society's journal are the importance of *viva voce* competitions and the dangers of pedantic grammatical puzzles in examinations. These dangers have been always referred to, even at a time when the drawbacks of hard papers were not so generally recognised as they now are. The *forte* of a Frenchman being his ability to teach by the "direct methods," the Society, as a body, not unnaturally advocated the tuition of French through French, provided the literary aspects of the language are not sacrificed to brainless fluency. *Le Français* therefore maintains that the mental discipline afforded by the study of a modern language is equal to the educational training of classics, but that accuracy in translation and knowledge of grammar are as important as the practical uses of a correct pronunciation and fluency in conversation.

In respect of correct speech in French, it is worthy of note that a long stay in this country possibly affects a French master, though in a smaller degree than is the case with his British colleague. He is not so apt to lose his accent as if it was "acquired abroad," but he might possibly in after years throw in a few English idioms in his original language. Frequent intercourse with his critical fellow-countrymen and the use of the library provided for members of the Society preclude the possibility of his being over-anglicised in his speech.

In another respect the Society is not without its usefulness to headmasters and pupils, for it is ready to give advice as to the choice of a suitable French master. An English headmaster does not always know the difference between a French primary school certificate and a good university degree. As Frenchmen do not place letters after their names, the preference is known to have been given to the more plausible man, irrespective of sound education and real ability. A word of advice from men in a position to judge is often useful, and the Society can nearly always recommend some able and qualified teacher possessing not only real refinement and sympathy with the boys, but also good experience, and ability to maintain authority without friction.

Teachers also find help in the monthly and yearly competitions instituted by the Society for the boys and girls of public and other schools. These competitions act, it has been found, as a desirable stimulus. The Society will, if desired, give directions as to the best kind of future work. These competitions have steadily grown in importance for the last twenty years. The Lady Mayoress every year gives away the prizes gained in the contests at the Mansion House, and extends the civic hospitality of this graceful ceremony to the members of the Society and to the candidates. The list of awards is a long one, and includes prizes presented by M. Paul Cambon, the French Ambassador, and Sir E. Monson, British Ambassador in Paris. Many prizes are given for proficiency in the *viva voce* parts of the examinations, such as the Charterhouse prize, the Harrow School prize, etc. Two vases of Sèvres porcelain are given by the President of the French Republic, and two gold medals are also sent, every year, by the French Minister of Public Instruction. The examinations are conducted by a board specially appointed, and the senior examiner is Prof. Barrère, Royal Military Academy, Woolwich, whose brother, M. Camille Barrère, French Ambassador in Rome, is the donor of a yearly prize.

The Society has done no less for members than for the promotion of the study of French as an educational and practical subject. Besides obtaining suitable posts for its members, special provision has been made for old age. The provident fund has steadily grown. Pensions have been granted to old and deserving masters and governesses, and temporary relief is not always limited to members. In 1897 a "Home" for French gover-

nesses was opened by the Society, and in 1903, when this new institution was sufficiently endowed and prosperous to stand by itself as an independent body, it was transferred to a larger house, 18, Lancaster Gate, Hyde Park, where the Association of French Governesses was soon started.

The membership of the "Société Nationale" is restricted to teachers of French, women and men, who are of French nationality or descent, and to British subjects holding French university degrees. But in all cases members must have satisfied the Council as to character, the length and nature of their experience in England, and the value of their other qualifications. Further particulars may be obtained by anyone interested in the work of the Society from the President, M. S. Barlet, Mercers' School, London—whose portrait

M. S. Barlet,
President of the Société Nationale des Professeurs de Français en Angleterre; Senior Assistant-master, Mercers' School, London, E.C.

accompanies this article—from the honorary secretary, M. B. Minssen, Harrow School, or at the offices of the Society, 8, Barnard's Inn, Holborn, W.C.

Among the honorary members are many distinguished Frenchmen who wish to support the institution, literary men of both nationalities, and headmasters of several public schools. When, at the request of the Society, the French Government appointed Dr. Welldon, then Headmaster of Harrow, Officier d'Académie, and Dr. Haig-Brown, then at Charterhouse School, Officier de l'Instruction publique, these honours were sent as an official recognition of the services rendered in the cause of education. Sir Edmund Monson, in sending his prize in 1903, and advocating the teaching of French through able French masters, emphasised the importance of this tuition as a bond between both nations, and the present friendly relations between the two countries give additional value to his words.

THE TRAINING OF SECONI SCHOOL TEACHERS AT THE VERSITIES.

The University of Birmingham

ALTHOUGH the University of Birm is a comparatively young institutio not neglected the duty of providing to enable the intending teacher to gain som ledge of the principles of his work an opportunity for obtaining the needful under supervision.

In 1901 it was decided to formulate a for the training of secondary-school t The Committee sought the advice of Mr. at that time H.M. Inspector of Training and an examiner for the education diplom Universities of Oxford and Cambridge. experienced help, a curriculum was dr which provided for two diplomas, the gen higher. These are awarded on the result examinations, the syllabus of which may outlined :—

General Diploma.—Candidates for the diploma must be over eighteen years of must have passed the Intermediate Exa in Arts and Science of the University of ham or some equivalent examination.

The examinations accepted as equiva those set out in the Appendix B of the Council for the formation of a teachers' re

The further tests imposed by the Unive as follow :—

(*a*) An examination (consisting of at l papers and a *viva voce*) in the art and t education as applied to the teaching of jects usually taken in the junior forms of the formation of character, the mainte discipline, and hygiene.

(*b*) The satisfactory delivery of not l two lessons. Four lessons must be prep the candidate, out of which he will select the examiner the other.

(*c*) Before receiving the diploma, ca must also submit to the Registrar one of th ing certificates :—

(1) From the head teacher of a school o nised standing, or from an officer of suc specially appointed for the duty of training that the candidate has spent not less months as a teacher or probationer in the and that he is a competent teacher an plinarian; or

(2) From an officer of the University charged with the duty of training, stating candidate has delivered not less than seve lessons in a school approved by the Unive this purpose, and that he is a competent and disciplinarian.

This certificate may be obtained at a either before or after passing the above e tion, but the general diploma will not be until it is produced.

The syllabus of the examination in the

theory of education mentioned under (*a*) above comprises the elements of psychology and logic and the theory of teaching.

In the two subjects first named the text books recommended are James's "Text Book of Psychology" and Carveth Read's "Logic, Deductive, and Inductive." The detailed course comprises reading in the following topics:—

Body and mind. Elements in mind. The senses and their training. Perception and observation. Ideas and their sequence. Memory and the training of memory. Fancy and imagination. Conception and thinking. Language and conception. Feeling and the feelings. Conditions and effect of feeling in general. Emotion and its expression. The sentiments and their training. Interest. Instinct. Will and conduct. Habit and character.

The art of thinking. Terms and their meaning. The analysis of judgments. Kinds of judgments. Reasoning. Types of reasoning. Syllogism. Analogy. Analysis of observation and experiment. Hypothesis and verification.

In the theory of teaching the text-books recommended are:—"Talks to Teachers" (James). "School Hygiene" (Hope and Brown). "Teaching and Organisation" (Barnett). "Lectures on Teaching" (Fitch), and "Stimulus" (Sidgwick).

The reading covers:—The aims of education, past and present. The development of modern ideals of education. Necessary stages of rational method. Apperception of individual notions. Transition from individual to general notions. Interest and its bearing on education. Theory of the five formal steps. Notes of lessons. Curricula and choice of subjects of instruction. The humanistic studies. Mother tongue. History. Literature. Foreign languages. Drawing. Naturalistic studies. General treatment. Object lessons. Elementary science lessons. Geography. Arithmetic and geometry. Association of studies. Concentration schemes. Physical education. Aims and methods. School organisation and administration. School hygiene. Discipline, its basis. Practical aids.

HIGHER DIPLOMA.—Candidates for the higher diploma may take the examinations at any time, but the diploma will not be granted until the candidate has passed all the examinations qualifying for a degree, or the equivalent thereof. The degree of any university in the British Empire is accepted as equivalent to the corresponding degree in the University of Birmingham. The further tests imposed by the University are as follow:—

(*a*) Candidates not already holding the general diploma must pass the necessary examinations and obtain this diploma.

(*b*) An advanced examination in the art of teaching, with special reference to one of the subjects offered for the degree, and in connection with the different methods that may be adopted in teaching the selected subject in the lower and higher forms of a secondary school. In addition to a paper on the foregoing, candidates will be required to deliver a lesson, previously prepared, on the subject chosen.

(*c*) An advanced examination in the theory of education, together with one special subject to be chosen by the candidate from the following list:—

(1) The history of educational ideas, to be studied in connection with a special book, and to include a special period to be prescribed from time to time. Or,

(2) The organisation of education in some foreign country.

The detailed syllabus for the present year under (1) above may be thus set forth:

Greek education. Music and gymnastic. Theories of Plato, Aristotle, Xenophon.

Roman education. Early period. Theories of Quintilian.

Medieval education. Trivium and quadrivium. Rise of universities. Abelard.

The Renascence. Classicism. Vittorino da Feltre. Erasmus. Luther. Revolt from classicism. Rabelais. Montaigne. Fenelon. Comenius. Milton. Locke.

Eighteenth and early nineteenth century. Return to Nature. Rousseau. Kant. Pestalozzi. Froebel.

Nineteenth-century education. Bell. Lancaster. Rise of scientific psychology. Herbart. Bain. Spencer. Modern tendencies.

The special period prescribed for the present session is that dealing with Greek education, and the text-books recommended in the University classes are:—

"The Educational Ideal" (Munroe), "History of Pedagogy" (Compayé), "Educational Reformers" (Quick).

For the special period the following are recommended:—"Aristotle" (Davidson), "Plato's Republic" (translated by Davis and Vaughan). "Theory of Education in the Republic of Plato" (Nettleship). Candidates are also required to show some acquaintance with original authorities, such as Milton's "Tractate on Education," Locke's "Thoughts concerning Education," &c.

The higher diploma of the University of Birmingham is accepted by the Board of Education as one of the qualifications for admission to Column B of the Teachers' Register.

It is further to be noted that residence is not necessary. Any candidate may present himself for examination on giving notice to the Registrar and producing the credentials necessary to show that he has passed the qualifying examinations in general subjects.

Should he desire to attend lectures he will have opportunity of attending the University classes and of gaining practical experience in one of the schools of the city, where he will work under the supervision of the Professor of Education.

The class fees for lectures are: For the general diploma, £6 6s; and for the higher diploma, £3 3s. The examination fee for either diploma is £2 2s.

The freedom from any stipulation as to residence or attendance at lectures is intended to give teachers already at work in schools an inducement to study the principles of education without requiring them to undertake the expenditure of time and money involved in a year's withdrawal from school. On the other hand, lectures are provided for those students of the University who intend to take up teaching at the close of their University career. For such students a further inducement is provided by regulations allowing the course for the general diploma to count as one subject in the Intermediate Examination in Arts or Science, while the course for the higher diploma counts as a subsidiary subject in the B.A. or B.Sc. examination.

The examinations are conducted by the University staff, assisted by an external examiner, who assists in preparing and revising the papers. At the present time the external examiner is Prof.

W. H. Woodward, of the University College, Liverpool. The combination of internal and external examiners is held to be useful, as tending to ensure a uniformly high standard and to add to the repute of the diploma. The work of training teachers is supervised by a special committee, consisting of the Principal, Vice-Principal, certain members of the Senate, and a number of co-opted members, chosen because of their interest in educational work. Among the latter may be mentioned Mr. R. Cary Gilson, Headmaster of King Edward's Grammar School, and Mr. G. H. Kenrick, the Chairman of the Education Committee of Birmingham.

Birmingham is exceptionally well equipped with secondary schools of various types. In the first rank, of course, come the well-known schools on the King Edward's foundation, comprising the High School in New Street, which prepares boys for the Universities, together with the subsidiary Grammar Schools at Camp Hill, Aston, and Five Ways. This great educational corporation provides schools of a higher grade for both boys and girls. Then there is the High School for Girls in Edgbaston, and the Church of England College for Girls, besides several private schools of good repute.

Some of these schools have already been used for the purpose of giving a practical course to intending teachers in secondary schools, and it is hoped that more will become available as the need arises.

The recent appointment of Mr. Alfred Hughes, late Registrar of the Victoria University, as Organising Professor of Education will result in the co-ordination of education in the Midland area by bringing the various schools into close touch with the University, especially as regards their curricula and leaving examination. Indeed, it is not unreasonable to hope that the University of Birmingham will in time become the centre of an ever-widening range of educational activities.

CAMBRIDGE LOCAL EXAMINATIONS, 1903.

Hints for Teachers from the Examiners' Reports.

THE forty-sixth annual report of the Syndicate appointed by the University of Cambridge to conduct the examination of students not members of the University has been published since the appearance of our last issue. The following extracts from the reports of the examiners of the papers worked by candidates at the Cambridge local examinations of December last should serve to indicate to teachers a number of general failings which may with advantage receive particular attention this year. The order of treatment adopted below is that followed in the report of the Syndicate.

Compulsory Section.—Reporting on the *arithmetic* papers of junior candidates, the examiners remark that the simplifications of vulgar fractions were done correctly by a large majority of the candidates, although often in a cumbersome manner; and of the correct answers many were not reduced to their lowest terms. A question on the measurement of areas, though really easy, presented great difficulties to the candidates, especially to the girls. The answers to this question frequently consisted of arrays of figures with no indication of their meaning. In the more advanced part of the junior paper the work on percentages of profit and loss was weak. In dealing with a question on decimals involving approximation and contracted methods of multiplication, many candidates failed to apply the methods correctly and showed ignorance of the meaning of an approximate result. There were fewer good algebraic solutions than usual.

A large number of senior candidates were ignorant of the number of yards in a mile, and many began a question in which a distance was given in miles and yards by reducing the yards to poles, &c., and so increased both their labour and the chance of error. A simple question depending mainly on the knowledge of the number of centimetres in a kilometre was very poorly answered.

Religious Knowledge Section.—In the *Old Testament* questions few junior candidates attained a high standard, and the work of many seemed to show that little attention had been bestowed upon the subject. The questions involving a knowledge of the religious ideas and moral teaching of II. Samuel were not satisfactorily answered except by a few candidates. The work of senior candidates was, on the whole, fairly good; but the geographical question was very poorly answered.

Only two questions out of the six, set to preliminary candidates on the *Gospel*, produced as a rule satisfactory answers. Three others—asking for the substance of the passages relating to the Shepherds of Bethlehem, the healing of the man with a withered hand, and the Transfiguration—generally elicited confused and imperfect replies. In dealing with the first of these subjects, the majority of the candidates either combined the story of the Shepherds with that of the Wise Men or sent up very meagre answers. The context question was not satisfactorily answered. On the whole, improvement was shown by junior candidates in knowledge of the Bible, as distinguished from knowledge of text-books; but in some cases surprising ignorance of Scripture history was displayed.

English Sections.—In *English grammar* only a few preliminary candidates succeeded in parsing correctly the indefinite pronoun "one." The greatest weakness was shown in analysis, in which a considerable number had evidently had no training. Candidates should be cautioned, the examiners say, against giving lists of words without specifying for what they are intended.

A question as to how to determine the case of a noun in a sentence was, as a rule, incompletely and unsatisfactorily answered by junior candi-

ıd a question on verb-forms was poorly
' candidates giving correct examples of
›assive. The parsing done by junior
s was somewhat lacking in fulness. In
ıys there was a gross neglect of full-
., indeed, of every stop but the comma.
estion on the substitution of one part of
r another some senior candidates mis-
d the point and quoted adverbs *derived*
ıominal forms instead of pronouns *used*
s, but many gave correct answers to the
ts of this question. The question on
was seldom well done by the seniors;
ras general that in the given sentences a
; at once an adjective and a pronoun.
:he essays sent in by senior candidates
f and gave little evidence of thought;
re unfinished, and a large number con-
reless mistakes which would probably
ı corrected if the candidates had read
ugh; in some of them colloquial expres-
abbreviations were to be found.
swers to questions on the geography and
connection and reference of given lines
t's "Lord of the Isles" by preliminary
s were very fair, but isolated words and
especially "pinion" and "a being of
phere," were not as a rule satisfactorily

nce and indications of real thought were
rare on the part of junior candidates in
vers to questions on *Shakespeare's "Julius*
There was perhaps less misinterpretation
:stions than usual, but the desire to write
quantity in answer to each question,
/e of real knowledge, often led the can-
nd especially the girls, to send up absurd
Diffuseness of this kind, the use of
ressions, and mistakes which seemed to
o having heard imperfectly what the
ıad said, were common. The para-
though perhaps slightly better than in
ling year, was still weak.
eatment of metre by junior candidates
› *Scott's "Lord of the Isles"* showed no
ıent on similar work in December, 1902.
araphrasing of *Shakespeare's "Julius*
by senior candidates was badly done;
ındidates entirely misunderstood the
quoted in the paper; others were
give a clear or exact explanation of
t some centres the attention of candi-
d been confined to details of lan-
d fact and to such detached studies of
as could be obtained from a text-book;
a genuine attempt had been made to
ıd the play as a literary whole. The
ss attained a degree of success in their
vhich was not approached by the former.
ı many cases was partly attributable to
ıdates' limited powers of expression and
se of modern English. The more in-
character of the work at the better
ppeared to indicate that the candidates
been trained to exercise their faculties
of observation and expression by writing essays on the subject of the play. In the case of answers by senior candidates on *Milton's "Paradise Lost,"* little was definitely known of the excellences of the Miltonic line, and those questions which invited some literary judgment were either unanswered or else answered in the vaguest of terms. This less mechanical side of poetical study might well, the examiners think, receive increased attention. Very few of the senior candidates were able to answer intelligently the two questions upon the relation of *Pope's "Essay on Criticism"* to previous and contemporary literature. Most of the candidates seemed to have very little accurate knowledge of any of the works which Pope took as his models. But questions on the substance of the poem, such as those on the causes of wrong judgment in criticism, and questions on certain peculiarities of the versification, were generally well answered.

The features of the work of junior candidates in *English history* calling for most notice were a lack of accurate knowledge as to dates, an excessive use of anecdote, and carelessness in reading the questions. At some centres the discursive and ill-arranged papers sent in by the candidates revealed a total lack of training in other than oral answering; at others the answers from the different candidates were practically identical, the words of the teacher or of a text-book being reproduced verbatim. There were, as usual, many cases of the confusion of important historical events; *e.g.*, the rising of 1381 with the revolt of Jack Cade. Many of the candidates had not heard of Poynings' Act.

The questions least well done by senior candidates were those on the Black Death, and the career of Peter des Roches. The practices, commented on last year, of committing answers to memory and repeating phrases from text-books, were still noticeable, but not perhaps to the same extent.

In the answers concerning products and exports in the *geography* papers of preliminary candidates there were frequent climatic contradictions, showing that the connection of these things with the geographical conditions of the producing countries was not understood. Two faults were very general in the geography answers of junior candidates. The first was vagueness. On the two maps that had to be drawn or filled in, towns were too often marked with large crosses that failed to indicate whether the candidates supposed the towns to be on the sea coast or fifty miles away from it. In other answers the position of important towns was stated without sufficient precision, and very indefinite statements were made as to the regions from which American products were derived. The second fault was failure to express clearly what the candidates apparently knew. The worst answers given by senior candidates in this subject were those given by some five hundred candidates to an alternative question relating to railway routes in England; here there was great ignorance and confusion of localities.

The prevailing fault was that information was poured out in profusion, without method, and in disregard of the exact particulars required; the result being that the candidates consumed their allotted time without doing themselves justice.

Classical Section.—In many cases hardly any attempt had been made by preliminary candidates in *Latin* to prepare the translation of the set books, and the work sent up was quite worthless. The unprepared translation was not often done well, and most of those who attempted the piece of composition showed a complete disregard of the primary rules of syntax. Many junior candidates showed inability to construct an English sentence, and when the Latin sentence was at all long the rendering was often very loose. In many cases the translation had obviously been learnt by heart. The syntax was generally poor, though excellent answers occurred in some papers. Incorrect explanations of constructions frequently ran through whole centres. The questions on the subject-matter of the Caesar were very poorly answered, and geography in particular appeared to have been neglected. It seems evident that in many schools the amount of time allowed for Latin is quite insufficient. This may account for the fact that the attention of so many candidates has obviously been directed to the translation alone, to the almost entire exclusion of syntax, subject-matter, and especially—in the Caesar paper—geography. In *Latin grammar* the declension of substantives was not, as a rule, satisfactory. The girls, generally, showed their chief weakness in the declension of substantives, their chief strength in parsing. The general conclusion to which the examiner of the papers of junior candidates came was that not so much time as heretofore had been devoted to Latin, and consequently no real grasp of the language had been attained by the great majority of the candidates. A few of the candidates who attempted the unprepared passages of ordinary difficulty translated them very well, but the work of the great majority was worthless.

A fair number of senior candidates got correctly the sense of both the unprepared passages of ordinary difficulty, and a few attained an almost faultless accuracy; but the majority, especially of the girls, showed that they needed much more practice, and there were many cases in which nothing intelligible was sent up. The easy unprepared translation was well done by some of the candidates; but many did not take sufficient care to analyse the sentences properly, and in consequence produced nonsense.

Modern Languages Section.—The unprepared passage in *French* of ordinary difficulty was moderately well done by juniors. Far too many candidates, however, were content to translate a French word by the English word most nearly resembling it, although the sense might be different. The grammar as a whole was poorly done, and seemed to show that the teaching of accidence had been neglected. Many candidates were unable to form a single adverb correctly, and only a small minority (especially of the boys) knew the names of the months and days of the week, or could answer the questions about the time of day. Correct answers to the question which involved a knowledge of the construction of the past participle were extremely rare. In the majority of the cases where unprepared French translation was taken in lieu of a set book, the work of the juniors gave no evidence of careful and regular practice in translation. Except in a very few instances of unusual quality and remarkable accuracy, confusion of grammatical forms and ignorance of common words were the cause of many disconnected and often contradictory sentences. The most noticeable fault in the unprepared translation of the seniors was a tendency to render French words by English cognates.

The chief faults in the *spoken French* of the seniors were (i.) neglect of the rules affecting *liaison*, (ii.) faulty pronunciation of the vowel *u* and some nasal sounds. In conversation most of the candidates were able to converse with a very fair degree of fluency. The marked improvement this year—especially in dictation and in conversation—was very gratifying.

The very large percentage of failures of junior candidates in *German* was chiefly due to a great number of large schools or centres having sent up numerous candidates of whom scarcely one obtained the minimum of marks required for passing. In the passage set for translation into German, the ordinary rules of accidence were completely disregarded. The great majority of the candidates showed themselves incapable of doing a piece of easy German composition, and most who attempted it would have done better if they had devoted more time and care to the revision of their translation from German into English. Many candidates had to be rejected for failure in easy unprepared translation. They were lacking in an elementary working vocabulary, and were unable to make out the simplest German constructions.

Mathematical Section.—The most common fault in the answers of preliminary candidates to the practical questions of their *geometry* paper was that in their anxiety to make new figures candidates neglected the printed instruction that all lines required in the constructions must be clearly shown. A large number had, apparently, no protractors, for they failed to measure angles which they had constructed correctly. The meaning of a "common tangent" to two circles was not generally known. As a whole the answers of preliminary candidates to their questions on *theoretical geometry* were less satisfactory; in many cases preparation for this part of the paper appeared to have been neglected in spite of the statement in the regulations that candidates "will be expected to take questions both in practical and in theoretical geometry." Proofs of the equality of triangles by folding over were as a rule badly done, and very few who attempted this method succeeded in giving satisfactory proofs. The words angle and triangle were frequently interchanged with disastrous results. The worst and most widespread error in

etical part of the work was that these s continually assumed that two triangles al in all respects if two sides of the one djacent angle were equal to two sides and nt angle of the other; this error seems to ied ground the more because some books : equality of the triangles when the equal : right angles, and candidates have ignored ation.

elementary part of the *geometry* paper of ndidates, the first of the two practical —the construction of a triangle with s and the angle opposite one given— lom done well. The majority of the s succeeded in constructing only one and in measuring an angle with the pro- any gave the reading of the supplement. r practical question involving the con- of a triangle with given sides and its cle was answered satisfactorily, but ndidates neglected to show their con- lines clearly, while others wasted time in description. In this part of the paper on the riders was better than usual, and more satisfactory than the proofs of the ns, which at some centres were very given. The proofs given of the con- f two triangles having equal sides were instances worthless, and the proof of the tal property of the tangent to a circle om the "limit definition" of the tangent me centres very imperfect.

ost noticeable defect in the answers of ndidates to the questions on *geometry* was ity of candidates to discern whether their was valid or not: a very large number s the majority—of the papers contained with correct solutions) one or more pages ess matter with the letters "Q. E. D." . The educational value of geometrical s much diminished if students are not distinguish between accuracy and in- in their own work. The questions in netry were answered readily by almost ndidates from certain centres, but were pted by the candidates from other (espe- s') centres: this seems to indicate some on the part of teachers in respect of y interesting and valuable branch of ics.

swers of junior candidates to the question *bra* paper on *like* and *unlike* terms showed y candidates had a very imperfect know- he meaning of an algebraic term. The of three fractions was creditably done by t the endeavour to reduce to lowest terms lted in wild cancellings. The solution ns shewed a marked improvement; but ification it was often thought sufficient to simplified form instead of the original and in the verification of two simul- quations, the necessity of verifying both was largely overlooked. A mistake re- in the last report on the answers of ndidates to the *algebra* paper was again very prevalent, namely, the taking of the common difference in a *decreasing* arithmetical progression as *positive*.

NATURAL SCIENCES SECTION.—Many of the junior candidates showed in their answers to the questions on *experimental science* that they had erroneous notions about "weight"; it seemed to be a common idea that a mass of two pounds falls a given distance in half the time taken by one pound. Few appeared to be aware that the boiling point of water depends upon the pressure, though it is not difficult to arrange experiments to illustrate this fact. A tendency to draw general conclusions from a particular experiment, in a way which is not legitimate, was somewhat common in the answers of these candidates to the chemical questions.

Many junior candidates had not been instructed in the characteristic properties of the simple classes of chemical compounds. The term "acid" was often very imperfectly understood. This was due to the inadequacy of the experimental teaching. The answers to the simple arithmetical question in the *theoretical chemistry* paper on the law of multiple proportions were not good. Many of the candidates were able to quote the law correctly, but could not apply it, showing that they had not grasped its meaning. When asked to identify the gas evolved on heating a substance with concentrated hydrochloric acid, a large number of the junior candidates in *practical chemistry* described tests which they could not possibly have performed with the limited amount of material at their disposal. A large number of senior candidates taking theoretical chemistry did not know the meaning of the terms "reduction" and "oxidation."

The calorimeters invented by Black and by Lavoisier and Laplace were in many cases described by senior candidates taking the paper on *heat* instead of Bunsen's ice-calorimeter. Most of these candidates were able to give some account of Joule's experiments on the mechanical equivalent of heat, but knew nothing about isothermals, critical points, or Prevost's theory of exchanges.

The work of preliminary candidates taking *botany* as a whole indicated too much book and blackboard teaching and too little dissection and experiment. The junior candidates had not, except at a few centres, been trained to make sufficiently large and bold sketches of their dissections. The simple principles of physiology were very imperfectly comprehended by junior candidates. Thus the majority of the candidates stated that plants droop in dry weather for lack of food. At many centres the experimental work must have been neglected, so that a number of candidates proposed to prove the principle that carbon dioxide is of importance to plants by shutting a plant up for a few hours in a space free from this gas, in full expectation of its rapid demise.

There was little evidence that junior candidates taking *physical geography* had been made familiar with maps of their own district showing physical features by hill-shading and by contour-lines.

Such maps can now be obtained at a small cost for almost any district. The questions on glaciers and volcanoes were not read with sufficient care, the result being that matter which was not required was often given. "Soil" was commonly taken as synonymous with "the earth's crust," and climate was usually regarded as comprising temperature only. Many of the senior candidates drew isobars of different values crossing one another. The descriptions of the forms of clouds were often obviously based on the short descriptions given in text-books and not on actual observation. The methods for determining noon were in most cases so vaguely described that it was evident that the candidates had not tried them; and it was, indeed, commonly asserted that at noon the sun is "directly overhead" or "in the zenith." Some of the candidates knew a little about the methods of projection employed in making maps, but few understood them well enough to give the reasons why different projections are used in different cases. Very few gave any reasonable explanation of the differences between the isotherms of January and July, although they were supplied with maps of these isotherms. Some of the candidates had apparently never seen a magnetic compass; scarcely any knew, within one or two degrees, the declination of the compass-needle in their own neighbourhood; and only one or two seemed to have determined it by observation.

EDUCATION IN THE UNITED STATES OF AMERICA.[1]

REFERENCE has already been made on more than one occasion in these columns to the public-spirited action of Mr. Alfred Mosely in securing the services of a distinguished body of British educationists and arranging for them to proceed to America to study on the spot the educational system and methods of the United States. Representatives of every grade of British education—from the elementary school to the higher technical institution and the university—were included in the commission, and the reports drawn up by the individual commissioners as well as their joint report and Mr. Mosely's preface are full of helps and hints to practical teachers. Mr. Mosely, too, has arranged to make the volume easily accessible to all persons engaged in educational work, in whatever capacity. Though members of the general public will have to pay the small amount named below for a copy of the reports, any educational authority, members of such authorities, county councillors, local managers, or registered teachers, may on forwarding to the publishers the cost of postage and a statement of their qualifications obtain copies free. We have often urged the Board of Education to adopt some such plan in the case of their special reports, and we are hopeful that the Board may now see its way clear to follow Mr. Mosely's excellent example.

The subjects submitted to the commission by Mr. Mosely were (i) the development of individuality in the primary schools; (ii) the social and intellectual effects of the wide distribution of secondary education; (iii) the effect of specific instruction given (*a*) in business methods, (*b*) in applied science; and (iv) the present state of opinion as to the value of professional and technical instruction of university rank designed with special reference to the tasks of business life. An examination of the individual reports shows, however, that many members of the commission decided to confine their attention chiefly to the branches of education with which they were in active association and more especially familiar. The consequence is, to name a few examples, we have included in the volume special reports by Profs. Aryton and Ripper on the education of the engineer, by Mr. Thomas Barclay on commercial education, by Mr. Blair on technical education, by Dr. J. Rose Bradford on advanced subjects of medical education, by Dr. W. H. Gaskell on the teaching of anatomy and physiology, by Principal Reichel on manual training, and by Mr. A. E. Spender on truant and reformatory schools. The other eighteen reports treat of education in a more general sense, and, in the limited space at our disposal, attention must be restricted to some of these sections of the volume.

On certain broad general questions there is almost complete unanimity among the commissioners. All are agreed as to the absolute belief on the part of the people of the United States in the value of education, both to the community at large and to agriculture, commerce, manufactures and the service of the State; and they are unanimous in their desire to impress on the British public the absolute need of immediate preparation on our part to meet the competition which will be the inevitable outcome of this enthusiasm for education in America. The commissioners, as a whole, too, have been impressed by the spirit which animates both teachers and pupils, by the close connection between theory and practice, and by the prominence given to manual training in the schools of the United States. Similarly, the commission as a body directs attention to the fact that the remuneration of teachers is by no means always placed on a satisfactory basis. Finally, the commission, with two exceptions, views somewhat with alarm the growing preponderance in America of women teachers.

The student of education reading the volume is perhaps most impressed by the fact that education up to the age of eighteen years is free, and by some of the consequences resulting from this fact. To quote Mr. Anderton, for example:

> The free schools are largely used by all classes. The son of the wealthy man sits in the same class with the son of the labourer. In Washington we saw the son of the President of the United States, two grandsons of the late President Garfield

[1] "Reports of the Mosely Educational Commission to the United States of America, October-December, 1903." xxiv. + 400 pp. (Co-operative Printing Society, Limited.) 1s.; post free, 1s. 4d.

r children of members of Congress, sitting and working ume classes as the children of coachmen, gardeners, , &c. Not the slightest difference is observed in these children; they mix in the classes and play- n terms of perfect equality.

lso astonishing to learn that the proportion s from the lower-grade schools who pro- and complete the secondary-school course all. Dr. Gray says:

said broadly that, of the total number of children to State offers free education in the *secondary* as well as *nary* schools, only twelve per cent. begin the secondary ly seven per cent. complete it, while only five per on their education at the universities.

ew of a statement like this it is not sur- to find Prof. Armstrong writing: "The secondary education, especially for boys, ess general (*i.e.*, than the belief in the -school system): it is probably no greater s."

hough provision is made for free education ublic high school up to the age of eighteen, schools often charging high fees are com- ough, especially east of the Alleghanies. tcher writes of the private school:

owing to the defects of the public high school, ry solid advantages to offer those who are anxious full intellectual development of their children. people living in a great crowded city will prefer, when able to afford it, to send their children to a well chool in the country: however good the public schools ney will never meet this want. But there are, beside boarding-schools, expensive day-schools in the great se final *raison d'être* is the defects of the public school sses and a standard of work unduly lowered by the of ill-prepared children. . . . In America, as in there is abundant room for private schools at high or none at low ones.

British teachers will be chiefly interested ers to the questions: How do American compare with ours? Is the standard What is the discipline like and how is it ned? and so on. The commissioners pro- abundance of information on these and points, but on many questions there is rant of agreement. We can refer only to Prof. Armstrong gives among his opinions

g's great doctrine of thinking in shape has, if possible, advance thus far in the American common schools rs." "Apparently no greater effort is made in the schools than in ours to lead children to read and to ally fond of reading." "The teaching of drawing is ed. . . . I did not learn that the attempt was de anywhere to put the teaching of arithmetic on a common-sense basis," and the schools are described "as re bookish than ours in their tendencies." "The dy lessons I witnessed, when not specifically botanical ical and scientific in character, were eminently super- worthless." "Undoubtedly the chief hold teachers their classes is consequent on their maintaining the f the pupils." One of the serious consequences to American teaching is their "inabilty to concentrate ion."

rring to the public high schools, Prof. Arm- says:

mmon with all my colleagues, I was favourably im- y the way in which English literature was taught, but I could not discover that the teaching was carried to a logical end and fondness for reading inculcated. I found no more evidence that proper attention was paid to writing and English composition than in our schools. . . . I met with no proper attempt to correlate the English compostion with any of the practical work.

In the teaching of mathematics and science, the American high schools seem to me to be considerably behind our best schools. I came across little evidence that the practical methods of teaching mathematics and geometry which are coming into vogue here are appreciated; and the old academic methods of teaching science seem to prevail almost exclusively.

Mr. Coward puts on record the following impression:

It did not strike me, after visiting a great many schools that the actual work, the writing, the spelling, the arithmetic, &c., was quite as good as we should find in the best schools of a similar character at home, but the composition and the readiness of the children to talk and furnish their own ideas were better.

Mr. Fletcher's report will prove of great practical value to teachers, for he answers the questions suggested above and many others in addition. He writes:

The work in the schools is mediocre, the discipline excellent . . . . . I am satisfied that I saw constantly work done and *accepted* which few English teachers would accept. I did not, on the other hand, see the grossly bad work which we often get. I concluded that on the whole their average—even of performance, certainly of effort—was higher than ours, but that there is little or no work which we should regard as really good. . . . Most of the work I saw in modern languages and science was old-fashioned and, I thought, barren—too much learning of rules and facts, and too little use and thought. The mathematical courses seemed to me very badly planned—even worse than our own have been. Much attention is given to English, both to literature and the art of writing. . . . . We have much to learn from America as to the proper place and use of English in our schools.

Dr. Gray agrees with Prof. Armstrong that the discipline of American schools depends on the interest excited by the teacher and the teaching, and with Mr. Fletcher as to the inaccuracy and antiquated methods in the teaching of Latin, but disagrees from both these authorities in regarding the mathematical teaching, as on the whole, good. It is interesting, too, in view of Prof. Armstrong's estimate of the science teaching, to find Dr. Gray writing, "the teaching of science in all its branches appeared admirable." We quote Dr. Gray's remarks on what he calls the most remarkable and most admirable feature in American education, and that is—

the *spirit* (as distinct from the *method*) which animates both teacher and pupil, and their keenness for education "as the one thing needful." As has been already seen, there is comparatively little to be learnt from the *methods employed*—at any rate, in the sphere of Latin, French, and even mathematical teaching, though in "English" and scientific teaching, and in the recognition of the close affinity which these subjects bear to practical life and industries, American methods are far ahead of our own.

A few only of the many points noted in reading these suggestive reports have been touched upon in this notice, but enough has been written to convince teachers that the volume is well worth study. American teachers, the joint report tells us, "seem to be possessed of but one wish—that of helping their pupils in every possible way," and

Mr. Fletcher says that on the whole they "take their work more seriously than do ours." We trust at least that British teachers will prove sufficiently interested in education to avail themselves of Mr. Mosely's generous offer, and to acquaint themselves with what is here to be learnt concerning American educational experience.

A HISTORY OF CLASSICAL SCHOLARSHIP.[1]

THIS book is an encyclopædia of learning, and it makes one dizzy to calculate how many facts are stated in the seven hundred pages. But in spite of the battalions and armies of facts, it is not only readable but interesting, and we have spent many hours with pleasure and profit in reading its well-stored pages. Adequately to examine such a book would need not only vast learning, but a very considerable allotment of space. We cannot pretend to equal Dr. Sandys in learning, but wherever we have been able with careful examination to check his results, or when our acquaintance with this or that matter happens to be fuller than the ordinary, we have satisfied ourselves that he is marvellously accurate and complete. We have, indeed, noted a few trifling omissions, and there are, as must be expected, times when our judgment differs from his; but we see no reason to discuss these at present, for they touch details, and we are more concerned with the general scope and plan of the work.

Dr. Sandys's plan includes an examination of the scholarship of ancients and moderns. In the early age it includes the methods and studies of education—the curriculum of the schools, and the measure of their effect on the pupils in after life—a subject which especially interests readers of this journal. From this point of view it is interesting to note, that the most cultivated nation of the world based its intellectual training on the national music and poetry, both which are almost ignored in modern schools. One can imagine the horror and pity of Plato or Aristotle if he could have heard the vulgar gabble which takes the place of human speech in English schools; or listened to learned disputants maintaining, some that literature cannot be taught, others that the object of education is to enable pupils to earn their living. It is interesting to trace in Dr. Sandys's pages the range of quotations found in Plato and Aristotle, and to calculate the comparative popularity of the various writers referrred to by the Greeks. Students of the theory of poetry may find matter here worth pondering; and Mr. Thomas Hardy may learn how the great critics of antiquity would have regarded his "drama" not meant to be acted, in a hundred and thirty scenes. The study of rhetoric of course holds a large place in the book; and we have found especial pleasure in the *brief* but lucid accounts of the Alexandrian and Pergamene schools of grammar, criticism, and philology.

Following the first Greek section comes a portion dealing with the "Roman Age of Latin Scholarship," beginning with the early scholars and translations and ending in the sixth century with Boethius, Cassiodorus, and Priscian. There are many learned scholars and antiquarians in this section, but their interest for us is inferior to that of the Roman students of Greek literature, who include Cicero, and other classical authors, "Longinus," and a number of Greek subjects of the Roman state. Dionysius, and especially Longinus, have left us some of the acutest and most intelligent literary criticisms ever made. With the Byzantine Age, Dr. Sandys enters on a subject which is practically unknown to the average student, but one which well repays study. Still more obscure is the study of the classical literatures during the middle ages. We all know that Aristotle was half-deified in Europe, but it is difficult to realise how wide and deep was his influence in the East. All these and many other topics are dealt with by Dr. Sandys; and he ends his book at the birth of Petrarch (1304), "the morning star of the Renaissance."

This vast survey, the interest of which cannot be indicated in a brief summary, comes at the present time most opportunely, when on all hands voices are raised attacking the classics as "useless," and proposing to substitute other subjects, sneering at "Hellenism," and preaching a thinly veiled materialism in its place. Dr. Sandys's book will supply those who strive to defend their faith with many new arrows for their quiver; in particular, suggesting to ask whether it it safe rashly to discard those elements which have always formed the basis of mental culture in Europe. To those also whose lot is cast in quiet places, and who have leisure to enjoy without the unpleasant necessity of fighting, Dr. Sandys's compendium will be welcome. It is indeed a monument of learning which does credit to the University which has produced it.

[1] "A History of Classical Scholarship from the sixth century B.C. to the end of the Middle Ages." By John Edwin Sandys, Litt.D., Fellow and Lecturer of St. John's College, and Public Orator in the University, Cambridge. xxiii.+671 pp. (Cambridge University Press.) 10s. 6d. net.

ELIZABETHAN POETRY.[1]

WE have not always been able to speak with approval of the editorial work on this new edition of the "Garner," but all doubt leaves us at the sight of Mr. Bullen's name. If any one has a right, by taste and knowledge, to speak on the subject of Elizabethan poetry, it is he. By his delightful anthologies he has earned the gratitude of all lovers of poetry, and it is most gratifying to find that he now appeals to a wider audience. The first of these volumes contains

[1] "Some Shorter Elizabethan Poems." xxvi.+358 pp. "Some Longer Elizabethan Poems." xxiv.+441 pp. An English Garner. With Introductions by A. H. Bullen. (Constable.) 4s. each net

ng-books of Campion's, four of Dowland's, s "Musica Transalpina," Wilbye's "First Madrigals," Morley's "Triumphs of Oriana," "Psalms, Sonnets, and Songs of Sadness iety," and five other complete collections, lly published in the "Garner," together number of single poems; and Mr. Bullen ded two other books of William Byrd's were not included in Prof. Arber's edition. e especially grateful for the last two, which e reprinted for the first time, although the erses are not all of the same merit as those earlier volumes. Of course, it is not to be d that all these poems, by so many authors, be equally good; there is chaff amongst ain even in the golden age. But taking ll round, they are a feast of delight. It not be possible to offer any detailed exami- of so miscellaneous a collection within our and we can only echo the words of William all true lovers of music: "A song that is d artificially made cannot be well perceived lerstood at the first hearing, but the oftener all hear it, the better cause of liking you cover." The music is not given along with gs; but the best of the Elizabethan songs emselves. The authors, practical musicians not composers as Campion was, had a ful instinct for what would sing; and to e bare words seems to awaken the echoes happy age when all England was alive with nd song, when the very barbers hung up a their shops for their customers to play on hey waited. These in a generation of hones and barrel-organs seem like Iris t rude men. Mr. Bullen prefixes an it introduction, bibliographical and critical, with authors who will be almost unknown historians of literature.

volume of "Longer Poems" contains six r sets (over 120 pages) not in the original er," which were composed by Richard ld, a poet of grace and fluency, if not inspired. Sir John Davies's "Orchestra" apsody on dancing, which contains many passages, if the theme is somewhat trivial. llen, for the first time, points out Davies's Lucian. Davies's "Nosce Teipsum" and ea" are also included. The other con- f the volume are "Astrophel," elegies on ilip Sidney, J. C.'s "Alcilia," Antony r's (?) "Daiphantus, or the Passion of Drayton's "Odes," and the anonymous dyllia" of Theocritus, the earliest English ion of the poet (1588). These longer poems, ole, are interesting historically rather than lly, but there are in most of them passages ity. Drayton's "Ode on Agincourt"— stood the wind for France" — is well but most of his other poems will be new lers, and will doubtless win him new

The introduction to this, as to the volume, will be welcome to students of re.

THE CLASSICAL ASSOCIATION OF SCOTLAND.[1]

THIS Association seems likely to prove a most useful body. The *Proceedings* include papers by Prof. G. G. Ramsay on "Efficiency in Education," Prof. Baldwin Brown on "Some Archaeological Aids to Classical Study," Dr. Heard on "Classical Study in the Face of Modern Demands," Mr. Coutts on "Public Examinations in Secondary Schools," and Mr. Harrowen on the "Teaching of Greek." Most of these papers, it will be seen, deal with urgent practical questions, and the treatment is practical. Thus, Prof. Ramsay proves by statistics that the study of classics, not for the specialist, but as an educational instrument for business men, is growing by leaps and bounds in America, and more than holding its own in Germany. In America, more than half the pupils in secondary schools (314,856 out of 630,048) were learning Latin in the year 1900, and of these only 61,517 were preparing for university or a higher scientific school; and both numbers and proportions have increased since 1890. With Greek there is a similar proportionate increase, although the totals are much less. The opinions of eminent scientific men in Germany and elsewhere are quoted to show that classics are held to be the best training for their particular work.

Dr. Heard echoes the opinion of all competent observers when he asks for reform, not abolition; urging that we now teach much that is superfluous, exact a too minute accuracy, and spoil our work by premature examinations. Mr. Coutts deprecated the multiplication of examinations and certificates, and easily picked holes in the Government system. How much easier he would have found that duty in England, where the weight of Government influence, through the grants, has been given so largely to science and mathematics, and the state of literary education in the small schools is something lamentable to contemplate! Mr. Harrowen advocates an earlier bifurcation, so that the ordinary pupil may have something definite to take away with him from his study of Greek. He would soak him in Homer; give "less drive" and less examination, and more humanity. He appreciates the use of archaeology, but would not go so far as Prof. Gardner does; and he depreciates the value of spoken Greek. The last is the only point where we join issue with Mr. Harrowen: he has evidently not realised the way in which spoken Greek may be used, as a catechism on the author read: there is nothing like it for making a boy quick. We agree with Mr. Harrowen in his recommendation of the free use of good translations. Prof. Brown's article on archaeological aids contains much useful information, but our attention just now is absorbed by the practical side of the question, as the classics are fighting for life.

We have only touched on a few of the points of a text in this volume, and we would add that it is full of interest, and should be in the hands of every one who has the study at heart. An English Association on the same lines as the Scotch has now been formed; and we hope that both will do much to inform public opinion, so sadly ill-informed on this subject.

Logarithms for Beginners. By Charles N. Pickworth. ii. + 47 pp. (Whittaker.) 1*s*.—Though we think a special book on logarithms should not be necessary for class work, yet, if such a book be desired, this one will probably prove suitable. The explanations are simple and clear, and the method in which the calculations are carried out is satisfactory. Tables of four-figure logarithms and anti-logarithms are appended.

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1 "Classical Association of Scotland. Proceedings 1902-3." viii. + 132 pp. (Edinburgh: Pillans & Wilson.)

THE EXAMINATION OF THE EYES AND EARS OF SCHOOL CHILDREN.[1]

A GREAT deal has been written in late years on the Continent on school hygiene, on the importance of examining school children and adopting measures to ensure the best possible development of their minds and bodies. Bradford was one of the first towns to have a school-board medical officer. We had the great fortune to secure the services of our able president, Dr. Kerr, who performed his duties so well, and published his reports and investigations so efficiently, that other towns are now following our example, and London, which always attracts the best of everything, has appointed Dr. Kerr medical officer to its school board, where he has the supervision of no less than 600,000 children.

One of the most important duties Dr. Kerr has to perform is to watch over the eyes and ears of these children. Eight medical men were appointed to examine and report on the eyes of the children. The results of their investigations have been most interesting and remarkable, especially when compared with the statistics of similar work done on the Continent. About 10 per cent. of these children (no less than 60,000) have defective eyesight; that is, they have less than one-third of normal vision. Fifty-four per cent. of the children in Standard 1, and in Standard 7 no less than 80 per cent., have *normal* vision. In Standard 1, 6 per cent. have bad vision (less than one-third of normal), and in Standard 7 only 8·8 per cent., a marked improvement. Very bad vision (one-sixth or less of normal) was found in 1·6 per cent. in Standard 1, and 3·5 per cent. in Standard 7; this is probably due to a slight increase in short sight. These figures are most gratifying if we compare them with the vision of continental school-children.

Cohn has collected the statistics published by a large number of German observers. He finds that in the lower classes in German schools 22 per cent. of the children are short-sighted, and in the upper classes no less than 58 per cent.; in some cases, indeed, as many as 74 per cent., a most alarming increase in bad vision. According to the report of the Royal Commission on Physical Training in Scotland, 31·5 per cent. of the children in Scottish board schools have bad eyesight and 42 per cent. have defective hearing.

Dr. Kerr also examined the vision in a number of precocious and of backward children of twelve years of age. He found that of the former only 18·7 per cent. had defective eyesight, whereas of the latter no less than 29·6 per cent. could not see well. These figures prove conclusiveiy that defective vision, if not attended to, retards the mental development of the children, though, of course, there are other obvious reasons to be considered. The vision of London children varies in the different schools. The worst results are found in the poorer, and in the Jewish districts. We know that myopia, or short sight, depends greatly on the shape of the head and orbit, the higher the orbit the more likely is the eye to become short-sighted. Therefore the frequency of myopia varies in the different races, and it is very prevalent in the Jewish race.

All children with defective vision in London board schools are supplied with a card, on which the parents are informed that the child cannot see well, and that it should be examined by a medical man. In urgent cases a red card is given. This year medical men tested the vision of the children, next year the teachers will do this, and refer defective children to the medical men appointed. The eyes are not treated or tested for glasses, but the children are sent on to the family doctor or to a hospital. The poorer children in all board schools should be examined and supplied with glasses by the authorities, and I hope that in a few years this will be done. A great deal of money is wasted in trying to teach children who cannot see or hear properly, much more than a few glasses would cost. A few shillings spent on spectacles would, in a great many cases, make all the difference in the world to a boy's career at school.

As yet no systematic examination of the ears of the London school-children has been made. Dr. Cheatle has examined 1,000 children of the Hanwell District School, and has kindly permitted me to make use of his investigations. The ears were normal only in 432 cases, or less than one-half, a most startling and remarkable discovery. The middle ear was diseased in 518 cases. No less than 434 children had adenoids, and 23[illegible] enlarged tonsils, many of course having both enlarged tonsils and adenoids.

These figures show that a large proportion of children, in the board schools at least suffer from defects of hearing and sight. How is it possible for a boy who cannot see, whose eyes ache when he reads, who cannot hear what the teacher says, to get on at school? He is most seriously handicapped, not only at school, but also in after life. You will generally find that a child who cannot read well, and who takes a dislike to his lessons, suffers from some defect of vision. Instead of bullying the boy, and constantly telling him he is stupid and lazy, his parents or teachers should take the trouble to find out why he is backward. Probably they would discover that he could not see to do his lessons, and that this was the reason why he disliked school. In the good old days, and I am sorry to say often even now, it used to be the custom at most schools for each class to have a few boys attached to it who did not get on, in whom no one took any interest, who sat by themselves and did what they liked. No one took the trouble to find out why they were backward. It was often, as Dr. Kerr's statistics prove, because they could not see or hear as well as the other boys. Surely this is a most unsatisfactory state of things. I am often asked to examine the eyes and ears of boys who have been at school for years, who have never got on well there, and who have been condemned as stupid by the teacher. The parents have been advised to send them on to a farm in the Colonies, or to South Africa, or formerly to put them into the Army, because they were too stupid to go into business or enter a profession. The boys were examined and found to suffer from defective eyesight, and not to be stupid at all.

Deafness in children is generally due to adenoids or enlarged tonsils. If these are removed early the deafness disappears, if they are not it increases and becomes incurable. The child cannot breathe through the nose, keeps his mouth open, has a vacant, dull expression, snores, and has a narrow, undeveloped chest. I remember, not very long ago, how a mother, in a great state of excitement, brought her son to see me. She had taken him to a new school. The boy had adenoids and was deaf. The headmaster spoke a few words to the child, and then turning to the mother said: "I am afraid your boy is not quite right in his head. I am surprised you have not been told of this before. He can certainly not be admitted into this school." The boy had the adenoids removed and the deafness cured, and shortly afterwards he became a promising pupil in that very same school. Parents are very apt to overlook slight failings in their own children. They do not notice that the boy cannot see or hear so well, they ignore his complaints of headache after reading, that he cannot see the blackboard at school, &c., and they get used to his dull, vacant expression. It is the duty of the teachers to notice these things. The sight and hearing of each boy should be tested on admission to the school, and again every year as long as he remains there. The

[1] By Adolph Bronner, M.D., Senior Surgeon, Bradford Eye and Ear Hospital; Laryngologist, Bradford Royal Infirmary; reprinted from the *Journal of the Sanitary Institute*, quarterly number, January, 1904.

ily be done by the teachers. Test-types, with letters, should be hung on the wall at a certain the boy told to write down all the letters he can cannot see them all, or if he cannot read small 5 inches, this should be at once reported to the the boy not allowed to return to school until he ically examined and treated. An infectious disease surface of the eyelids, *follicular conjunctivitis*, is evalent at boarding schools. The eyes are red, ıks and cannot bear the light, the lids are puffy and often gummed together in the morning. l holidays I always see children who suffer from hey tell you that many of the other boys have the nt, but that no notice is taken of it by the masters. go numerous schools in Yorkshire had to be closed ks, and all the boys sent home to have their eyes treated.

ş can be roughly tested by a watch, or the boy told ain words spoken in a whisper at a distance of If the boy snores, has a vacant expression, is d dull, he will probably have nasal obstructiou due nd these should be removed.

ıple suggestions were adopted at all private schools rd "private" in distinction from board schools), number of boys would learn a great deal more, e placed in a much better position to fight the Many boys have an idea that the chief obiect in to go in for sports, and that learning is only a ısideration, and that if they only excel in sports g their duty. In this they are often encouraged ıts, and even by some masters. When they leave ıave to work for their living they find out their wish they had sported less and worked more. ıools are improving day by day, and many parents ıildren to them beeause they can get a better re than at other schools. Most towns now have a officer, who though he is not paid very generously, spend a great deal of his time watching over the ıe masters of private schools should do all in their ırove their schools, and look after the boys, and ıt and most important things they can do is to see who cannot see and hear well should be examined man, and properly treated. Many parents have objection to their children wearing glasses. Of s not improve the appearance, but children go to look pretty, but to work and learn, which they ınot possibly do if they do not wear glasses.

POINTS OF VIEW.

ıt forget the great responsibility that rests upon us, the responsibility of making our schools life and not for livelihood," the planting and of "intelligence, judgment, and character" in the mitted to our care, remembering at all times the ıaxim "that the safety and strength of a city and side above all in the good education which furwith well-educated, honourable, and well-trained Ir. GEORGE SHARPLES, President of the N.U.T. h.

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tor of Education, when appointed, must not spend ın office; the duty of signing cheques, of ordering ıg out stores of copybooks, papers, &c., and of filling up the innumerable forms which a paternal Government desires for the satisfaction of its curiosity—these duties are not for him, but may safely be left to a clerk. The Director, on the other hand, must know about the schools and the teachers from the educational point of view. He must know which are the bright, stimulating teachers, and which the dull and deadening ones; which are on the alert for improving their methods, and which are satisfied with the traditional dull routine. In particular, he must satisfy himself that our secondary schools are providing a broad and liberal bringing up for the elementary teachers of the future.—Prof. HUGHES, in his Report on the Educational System of Coventry.

NOT without reason has the schoolmaster been the scoff of modern novelists. Sinned against by society he may have been; but he has sinned in return. He has refused to learn. His bigotry has sometimes been more stupid and more impenetrable than that of the priest. He has in too many cases remained with the outlook of a mole, the interests of an ox, the initiative of an oyster, the enthusiasm of a jelly-fish, and the hide of a rhinoceros. . . . Scarcely an eddy in the onward movement of progressive thought has swept into his narrow domain. He has had interest in nothing, not even in his own work. He has combined the culture of a bucolic boor with the arrogance of a newly-fledged ritualistic curate.—Dr. F. H. HAYWARD, in the "Secret of Herbart" (Sonnenschein).

THE general effect of my inquiry has been to confirm views previously held:—(1) That the problem of technical education is not a side issue, but an integral part of the problem of education in general. (2) That the solution of the problem of technical education, as of that of education in general, will be partial and incomplete unless the problem is attacked from the psychological as well as from the industrial and commercial point of view. (3) That the establishment of a close connection between institutions for technical education on the one hand, and industrial and commercial organisations on the other, is an essential factor in a successful solution of the problem of technical education, as of that of industrial and commercial progress.—Mr. R. BLAIR, Assistant-Secretary for Technical Instruction for Ireland, in "Some Features of American Education."

HISTORY AND CURRENT EVENTS.

"WAS it, he asked, in accordance with the Constitution that the Prime Minister should cling to power when the country demonstrated, whenever it had the opportunity, that his Government no longer enjoyed its favour?" So was Sir Henry Campbell-Bannerman reported to have spoken in the House of Commons at the end of March. Mr. Balfour said in reply that he "was at a loss to understand why the leader of the Opposition should expect the Government to take the unprecedented course of resigning while they still retained the confidence of the House of Commons." We remember that a big book was written some twenty years ago to prove that Beaconsfield's Ministry was in opposition to the opinion of the country for three or four years previous to 1880, and indeed the General Election of that year seemed to prove the writers to have been in the right. But who does govern this country? It has been said that the Brito-Irish electorate are supreme only at the time of a general election. If so, was Sir Henry Campbell-

Bannerman correct in his implication that the policy of the present Government is unconstitutional? It is a point to be considered in discussing whether our constitution is democratic or aristocratic.

After nearly a hundred years we are to have another Aliens' Act. It is interesting to turn from the reports of the Home Secretary's speech when introducing the Bill to the pages in Erskine May's "Constitutional History" where he treats the question of the Alien Bills of 1793-1818, and remark the change in public opinion since the third quarter of the nineteenth century. We are becoming "like the nations round about us." We note also the different reasons for the various legislation. A century ago we feared the spread of French political ideas, and the possibly dangerous influence of Jacobinism in thought and action. Later, it was still against revolutionary ideas that we sought protection, as in 1848, when, however, the Act was not enforced even in a single instance. We still maintained on the whole our "proud distinction," and remembered the many exiles who had fled to our shores and out of their very indigence had created new industries for us. We are thinking differently now, and in the name of "economic" protection are proposing to exclude "undesirables."

The working of the British Empire is a matter of contemporary history and should engage our interest. We therefore note two features of present-day importance, both illustrating the play between the centripetal and centrifugal forces which shape world politics. In 1895, Canada and Newfoundland were negotiating for federal union, but failed to come to an agreement because Newfoundland was so poor and was troubled with the question of the "French shore." Now that Great Britain and France seem to have solved this and other old matters of conflict, Canada is renewing her courtship, but Newfoundland is now so prosperous that they see no reason for federation and prefer isolation. In South Africa we have given a negative answer to one problem. The Boers are not to rule there. So much the war has done, just as Cromwell settled that Ireland was not to rule herself, let alone England. But this solution has only cleared the way for a further problem. Will Cape Colony, the Transvaal and the other South African colonies unite in a federation? The question is to be settled, not now on the battle-field but in the legislative councils of the various colonies. But it is not yet settled.

In March there was a proposal made in the House of Commons which would, if adopted, have seriously interfered with the routine of the Appropriation Bill. It was set aside by the Chancellor of the Exchequer as lightly as the proposal in 1878 to impeach Lord Beaconsfield, and indeed both proposals carry our minds back to the seventeenth century, the period of the last great struggle between Crown and Commons. The March suggestion was that, in times of great Imperial urgency, the King should be empowered to raise five millions for military purposes without the consent of Parliament. The very words as well as the substance of the motion recall the case of John Hampden in 1637-8, when the lawyers on both sides discussed the question of "urgency" in naval matters, and the need to make such hasty preparations for war or coast defence that Parliament could not be summoned. It is also worthy of remark in this connection that the lawyers of the U.S.A. found that in the power given to the President to conduct war was involved the constitutional right to raise money for the purpose without consulting Congress. These modern thoughts should be remembered before we decide how to teach the history of Ship Money.

ITEMS OF INTEREST.

GENERAL.

The thirty-fifth annual conference of the National Union of Teachers was held this Easter at Portsmouth, under the presidency of Mr. George Sharples, of Manchester. Seventeen years ago the Union met in conference at Portsmouth, and its membership was 12,431; at the present time there are 50,[illegible] elementary school teachers on its roll. In his presidential address, Mr. Sharples dealt at great length with the Education Act of 1902, which, he said, brings into line and into organic connection with the local authorities the 14,275 bodies of voluntary managers who conducted their schools without reference to any other school or public body, and places on the management of each school at least two representatives of the outside public. It lifts education to a higher and more fitting plane—the plane of national and local responsibility, for the well-being of the children. It makes the whole cost of public elementary education a public charge. It abolishes the one-man manager. It gives rights which have been long sought by the Union, a right of appeal against unjust dismissal, the prohibition of compulsory extraneous tasks, and the civic right of the teacher to share the duty of local control of public education.

After giving much attention to the "religious difficulty," Mr. Sharples discussed some of the difficulties before the new education authorities. Among the problems demanding solution the first place was given to the remedy for the dearth of efficient elementary school teachers, and Mr. Sharples considered how teaching can be made more attractive as a profession, and what steps education authorities might take with advantage to remedy the present shortage of teachers. The co-ordination of schools was then dealt with, and schemes to correlate elementary and secondary education were passed in review. Speaking of evening schools, the president said: "Sixteen years ago I suggested that all youths employed in skilled trades or commercial houses should be compelled to attend classes two or three evenings per week in winter—classes where they could be taught the principles underlying the practical work they were taught in the workshops. And, further, that the employers might pay the fees, inasmuch as they would directly benefit by the increased intelligence their apprentices would bring to bear upon their daily work. It was laughed at then, but to-day many enlightened employers do this, and both employers and employed mutually benefit. They are doing an incalculable benefit to the young people in preventing the lapse of a taste for study at a most critical age, and are doing a service to the State in preventing the waste of knowledge which has cost it so much to impart." The address concluded with a reference to the relative advantages of inspection and examination.

The following resolutions relating to the provision of scholarships for elementary schools, which was proposed by Dr. Macnamara, M.P., was adopted unanimously by the National Union of Teachers at their recent conference: (1) That every local authority be requested to publish a prospectus of all scholarships and exhibitions existing within its area; (2) that every public elementary school should have attached to it a number of scholarships, such number to be proportionate to the number of scholars enrolled at the school, these exhibitions to be awarded on the nomination of the teachers and managers; that the remainder of the scholarships available for the area should be awarded afterwards by competitive examination among scholars in various schools within that area; (4) that the examination should invariably be based upon the curriculum of the school; (5) that every scholarship should be divided into two parts—educational and maintenance—and that a parliamen-

n should be asked for setting forth the total amount of ailable for the purposes of providing scholarships, and exhibitions for the elementary schools within the aces of higher education in each local authority area.

W. HEADLAM, Dr. R. P. Scott, and Dr. F. Spencer appointed Staff Inspectors of Secondary Schools by ent of the Board of Education. They will assist the ector of Secondary Schools, Mr. W. C. Fletcher.

venth annual conference of the National Association l Training Teachers was held at Hastings during ek. Sir John Cockburn, the president for the year, an address on the "psychological importance of aining." It is the high mission of manual training said the president, to remove the common reproach chool does not prepare for real life, for dull boys are often found to make the most capable men. aining is specially appropriate in present-day educa- is pre-eminent in developing constructive ability and of keeping in touch with environment. Twenty manual training was advocated chiefly to develop of the hand. It is now recognised that the hand is best channels to the intelligence, and that in training we minister effectually to the requirements of intel- l moral as well as of physical development. Time intellectual studies would be saved if half the school spent in the workshop. Pupils detect their errors in k more readily than in abstract processes, and learn inaccuracy and slovenliness. Nothing so clearly tes the difference between right and wrong as manual A lie in wood stands self-exposed.

announced, just after we went to press last month, Jniversity of London had received two magnificent of higher education. One is due to the generosity nald Currie, who has given £80,000 for the erection ol of advanced medical studies in connection with College, London, and in this way has removed the ining impediment to the adequate incorporation of College with the University of London. The second of the Goldsmiths' Company, which has given the (about seven acres) of the Goldsmiths' Institute at , together with its buildings, equipment, and apparatus, iversity of London for the purpose of promoting ty work in South London." The value of this gift is at about £100,000.

ter meeting of the Modern Language Association was ris, beginning on April 14th. At the inaugural meet- n the Amphithéâtre Descartes, M. Belljame presented sh visitors to the French Minister of Instruction, and ter's speech was replied to by Sir Hubert Jerningham. ernoon, in the Amphithéâtre Michelet, addresses were by M. Emile Hovelaque, "Sur la Réforme de ment des langues vivantes," and by Prof. Sadler on nch influences in English education. On April 15th, resses were given as follows: M. Baret, "Sur ation de l' Enseignement secondaire en France," Mr. the "Teaching of French in English Secondary M. Georges Pellissier "Sur les Prosateurs Français rains," and Prof. Hudson on "Modern English On April 18th, M. Paul Passy and Dr. E. R. both dealt with the applications of phonetics, M. Floran described "Un Lycée Autonome," and Mr. y Brereton gave a paper on "The Limits of the of the Local Education Authorities in England." On the concluding day of the meeting, M. Seignobos discussed the question, "Comment un étudiant étranger peut-il le mieux étudier la France contemporaine," and Dr. Heath took up the subject of the "Place and Treatment of Modern Languages in the School Curriculum." During the days of the meeting social functions of various kinds were arranged as well as visits to educational and other institutions.

RULES which for the future will regulate the appointment to commissions in the army have been issued by the Military Education Division of the War Office. To show they have attained a good standard of general education candidates for commissions must obtain either a "leaving" certificate or a "qualifying" certificate. The former covers the same subjects as the latter, and may be granted by a recognised examining body to candidates of seventeen years and upwards who have received three years' teaching in a recognised school, provided their conduct is satisfactory. The "qualifying" certificate covers two classes of subjects, viz.: *Class I.*, in which all must pass—English, English history and geography, and elementary mathematics; and *Class II.*, of which candidates must qualify in two subjects, viz., science, French or German, Latin or Greek. The science must include practical work, and every leaving certificate must certify that the candidate has taken a sufficient course of geometrical drawing and an elementary course of practical measurements. Leaving certificates are to be accepted from the Oxford and Cambridge University examining bodies, the University of London, the Scottish Education Department, and other home universities satisfying the required conditions.

THE first International Congress of School Hygiene was held at Nuremberg from April 4th to 9th. The congress was inaugurated by Prof. Griesbach, the president of the "Allegemein deutschen Vereins für Schulgesundheitspflege." Every European country, except Italy and Turkey, was represented at the congress, and in addition to these European countries America and Japan were also represented. The work of the congress was carried on in seven sections. The first dealt with school buildings and the furnishing of the school-room, the second with the hygiene of residential schools, and with the physiology and psychology of educational methods and work. The third section was concerned with instruction in hygiene for teachers and pupils, the fourth with physical education and training in personal hygiene, the fifth with contagious diseases, ill-health, and conditions affecting attendance at school. The sixth section had for its subject special schools, including those for the feeble-minded, the blind, deaf, dumb, cripple, invalid, and exceptional children, and the seventh section considered out-of-school hygiene, holiday camps and schools, and the relation of the home and the school. An exhibition of apparatus necessary for school purposes was held. Great Britain was represented by a committee of representatives from various societies interested in education and hygiene, with Sir Lauder Brunton as president. The next International Congress of School Hygiene will be held in London in 1907, and Sir Lauder Brunton has been elected president of that congress.

THE Board of Education has issued a list of twenty-three holiday courses, to be held on the Continent at different times during the present year, but mostly in the summer months. Five are in Germany, viz., Greifswald, Jena, Königsberg, Marburg and Neuwied; three in Switzerland, viz., Geneva, Lausanne and Neuchatel; one is in Spain, viz., Santander; and the rest are in France, viz., Tours, Honfleur, Paris, Grenoble, Nancy, St. Servan, St. Malo, Villerville-sur-Mer, Boulogne, Caen, Bayeux, Lisieux and Dijon. The paper issued by the Board of Education gives the date of each course, the fees, return fares from London, lowest cost of boarding,

principal subjects of instruction, address of local secretary, and other details of importance to intending students. Copies of the paper can be obtained free on application to the Board of Education Library, St. Stephen's House, Cannon Row, Whitehall, London, S.W.

REPRESENTATIVE managers of the London Board Schools have decided to present a memorial to the members of the London County Council, of the Education Committee for London, and the Metropolitan Borough Councils setting forth the importance of the work carried on by local managers of schools who have acted under the School Board for London. The memorial expresses the hope, among others, that under the new London Education Committee there should be bodies of local managers as at present with similar powers, and that secondary bodies of managers with inferior powers should not be formed; that the number of such managers required should be calculated as under the London School Board, and that not more than three schools should be grouped together under one body of managers; that the qualification for appointment as a local manager should be ability to visit the schools, and willingness to carry into effect the regulations of the Education Authority; that managers should be appointed for three years, and be eligible for re-election; that means should be adopted whereby managers who do not fulfil the duties of their office should be removed from their posts; that the managers of provided and special schools should have the supervision of all charitable assistance to the children given in or through the agency of the schools.

A BILL to provide for the compulsory adoption in about two years' time, in the United Kingdom, of the metric system of weights and measures, has been read a second time in the House of Lords since the publication of our April number.

THE new London Education Committee is constituted as follows: Members of the London County Council—J. W. Benn (the chairman of the Council), E. A. Cornwall (the vice-chairman of the Council), F. P. Alliston (the deputy-chairman of the Council), A. A. Allen, E. Barnes, F. Bayley, R. Bray, W. C. Bridgeman, E. Collins, Sir W. J. Collins, G. Dew, W. H. Dickinson, E. B. Forman, T. Gautrey, the Hon. R. Guinness, T. E. Harvey, the Rev. A. W. Jephson, W. J. Lancaster, A. L. Leon, Sir F. Mowatt, W. E. Mullins, John Piggott, W. Pope, G. H. Radford, Arthur B. Russell, W. S. Sanders, A. J. Shepheard, Evan Spicer, James Stuart, C. Y. Sturge, J. T. Taylor, the Hon. F. Thesiger, A. A. Thomas, W. W. Thompson, G. Wallas, Sidney Webb, W. Wightman, T. McKinnon Wood. Women: Dr. Sophie Bryant, Miss Margaret Eve, Mrs. Homan, the Hon. Maude Lawrence, Miss Susan Lawrence. Members of the London School Board: Sir Charles Elliott, the Rev. J. Scott Lidgett, G. L. Bruce, H. W. Liversedge, J. G. Ritchie. Sir W. J. Collins has been elected chairman of the new committee.

IN addition to his report contained in the Report of the Mosely Commission referred to on p. 184, Mr. Blair has given his impressions of American schools and colleges in a book, "Some Features of American Education," published by the Department of Agriculture and Technical Instruction for Ireland. All who are engaged in technical education, whether as administrators or teachers, should endeavour to procure a copy of the volume, for it is full of practical hints as to the causes of American success in technological instruction.

THE Board entrusted by the Senate of the University of London with the management of the school-leaving certificate examination and the inspection of schools has, at the desire of a number of schools, decided to hold a school-leaving certificate examination beginning on July 4th, in addition to tha connection with the ordinary matriculation examin ginning on June 13th. Any school desiring to prese for the school-leaving certificate will be required to general statement of the complete course of instructior the school and also the curriculum of study pursue candidates. Further information and forms of entr obtained on application to the Principal, University of South Kensington, S.W. The entries must be made June examination before May 1st, and for the July exa before June 1st.

WE have received from Washington the second volu report of the U.S. Commissioner of Education. It i with interesting and valuable statistics referring to ev of American education. Among the multitude of tabu ments contained in the volume we can only refer at one, and this deals with the percentage of the total n secondary school pupils in the United States pursuin studies. In 1889-90, 33·6 per cent. of these seconda pupils were studying Latin, but in 1901-2 the percenta Latin had reached about 50 per cent. Since 1890 th of these pupils studying algebra has increased from cent. to 55·3 per cent. in 1901-2. Algebra and Lati most popular subjects, and these are followed, in or number of pupils taking them, by rhetoric, psycholog (other than that of the United States), geometry, physi physical geography. Each of the subjects named has ing of twenty per cent. or more of the total number of s school pupils. It is noteworthy that less than tw cent. of the students take up French, German, ph chemistry.

THE fourth occasional paper published by Clayesmor the work of which has been mentioned before in these deals with the social ideals for schoolboys. The suggests that, in the ordinary conversation of schoo means of lectures, social events may be introduced, those relating to the internal prosperity of the natior welfare of all classes of the community. Such them operation and Competition; the relation of Capital to the causes of strikes and their ruinous results to th commerce of the country; how the poor live, and all Poor Laws—these subjects should not be passed by outside the range of true education and the apprehensi ordinary schoolboy. But coming still closer, there practical opportunities of public service, even to a bo may tend to excite sympathy between class and cla establishment of a Boys' Club in connection with a sch such a Mission as is maintained by many public sch fine opportunity which is sometimes steadily missed, beyond the appeal for subscriptions, the boy is not face to face with the objects of his benevolence.

SCOTTISH.

THE Education Bill for Scotland was introduced Graham Murray, Secretary for Scotland, amidst a approval, which was in marked contrast to the recepti previous English measures. Sir Henry Campbell-B congratulated the Secretary for Scotland on having forward a Bill which carried out the ideas and aspiratic Scottish people. Mr. Munro-Ferguson said the prop been received with such an outburst of enthusiasm Secretary for Scotland might well ask, like Charles he had not come down sooner to earn this applause? has met with an equally hearty reception in the count speedy and safe passage may be predicted for it thr

f Parliament. The Secretary for Scotland intends to
r a permanent representation in Edinburgh of the
Education Department. In order to facilitate the
tion thus involved, Sir Henry Craik, K.C.B.,
to the Department, will shortly retire from that post,
as held for more than nineteen years.

nouncement of the impending retiral of Sir Henry
be received with universal regret throughout the
l breadth of Scotland. For nearly twenty years he
e power behind the throne in all matters educational,
eath all figments of "My Lords" and "The Council
on" the strong, self-reliant, enlightened personality
ry Craik was felt and seen. Sir Henry's rule has
been described as a despotism, and so to a certain
was, because Parliament could not, or would not,
ose measures of reform which were absolutely
and Sir Henry Craik had to make legislation himself
paralysed in the midst of problems demanding
ttlement. So that if his *régime* has been a despotism
n, even in the opinion of his strongest critics, a
: despotism which made for educational righteous-
recount all his services to education would be to
the details of the slow educational revolution which
l over Scottish Schools during the past two decades,
ft the primary system of that country one of the
htened in the world.

rd to higher education, in particular, it is no
on to say that Sir Henry Craik found it clay and
it marble. In 1885, when he took up office,
cation was regarded as the monopoly of the rich,
r class schools were looked on with jealousy and
by those who should have been their natural pro-
e local authorities. Not one penny of public funds
d in their support, and, ill-equipped and inadequately
they were, they provided no higher education worthy
me. Sir Henry at once set himself to remedy this
f things. He established the system of Leaving
s, which set up a standard of higher education at
h schools should aim. Gross inefficiency was soon
and new life and vigour were given to the schools.
norities were encouraged to regard higher education
er of prime national importance, and to grudge no
its support. In 1885, not one penny of public
s expended on higher education; in 1904, Parliament
sked to create a fund of £500,000, on which higher
will have a first and indefeasible claim. Sir Henry
educated public opinion very effectively when this
and is received with a chorus of approval. The
l system of Scotland remodelled and reformed will
in a notable monument to Sir Henry Craik's en-
policy, and for this the honour and gratitude of all
will follow him on his retiral.

aving Certificate Examination is announced to begin
esday, June 22nd. Exact information as to the
o be examined in the various grades of each subject
forwarded at once to the Education Department on a
m which can be had on application. The circular
resses on school authorities the importance of taking
sible precaution to check copying, several bad cases of
l occurred in previous years.

ring meeting of the Classical Association was held in
of the United College, St. Andrews. Prof. G. G.
the President, occupied the chair, and there was a
ndance. The President, in his opening address, said
their last meeting they had the great satisfaction of
seeing a classical association formed for England and Wales. The objects of both associations were of a distinctly practical kind. What they wanted to do was not merely to meet amongst themselves and debate questions of classical scholarship, but to permeate the public mind with the idea that the conceptions at the foundations of classical teaching were those on which the whole education of the country ought to be based. They had no intention of asking for any specially privileged position for the classics, but he thought all classical scholars realised what the distinction was between subjects and the mode of teaching subjects. They were agreed that the end and aim of education was to draw out and build up the mind as opposed to the utilitarians who judged and valued education by its immediate wage-earning results.

PROFESSOR BURNET, St. Andrews, read a paper on "Form and Matter in Classical Teaching." He said that it was a mistake for the friends of classical education to adopt an apologetic tone or to seek to propitiate the enemy by making one concession after another. The concessions would be accepted without thanks and in the end it would be found that everything worth fighting for had been surrendered. He was strongly of opinion that it was a mistake, from a strategic point of view, to base the claims of classical education on the importance of its subject matter. Its real function was to be a training in form, and to do for a large number of people what mathematics did for others. In the past, classical education had inspired many with a lasting sense of literary form and a genuine love of good writing. They could only go on producing these results, however, if they stood up boldly for the formal side of their work, and this meant that in the universities pure scholarship must be ranked higher than what was called research, and that in the schools composition, and especially verse composition, should be restored to its rightful place.

LORD KELVIN has been unanimously elected Chancellor of Glasgow University, in succession to the late Earl of Stair. Lord Kelvin, during his fifty years' connection with Glasgow University, has extended its name and fame all over the world, and it is fitting that his Alma Mater should now confer upon him, her most distinguished son, the highest honour it is in her power to bestow. The veteran man of science, who will in a few months be eighty years of age, seems to have the secret of perennial youth, and may be trusted to throw himself into the duties of his new office with all the ardour and zeal that have been his life-long characteristics.

DR. SOMMERVELL, H.M. Inspector of Music in the English and Scottish Training Colleges, gave an exceedingly interesting and suggestive address before the Educational Congress of Ayrshire Teachers. Dr. Somervell prefaced his remarks by saying that the faults he had to find in regard to the music teaching in schools were the faults of a system and not of individuals. The Solfa system, which was almost universal in Scotland, should only be taught concurrently with, and as an aid to, the Staff notation. Teachers should remember that if pupils left school knowing only the Solfa, the whole range of instrumental music was closed to them. The inventor of Solfa himself had never meant it to be more than an aid to the Staff. Voice cultivation, which was the very essence of all vocal music, was almost unknown in Scottish schools. There was too much part singing in schools, and too little singing in unison of their own beautiful national songs. As a rule, the second and third parts were a mere unmeaning iteration of one or two notes, reminding one of the drones of the bagpipes. The quality of the music taken up in schools had received too little attention in the past, and the time of the children was taken up with worthless songs whilst the glorious national songs

of the Empire were neglected. Just as they would be perfectly safe in choosing for their literature lessons passages from Shakespeare or Tennyson, so they might with confidence turn for their vocal music to the national songs of their common country.

A MEETING of the Modern Languages Association was held in the University, Glasgow, when Prof. Kilpatrick presided over a large attendance. The chairman, in opening the proceedings, said that a proposal had been made to establish a summer course of modern languages in this country similar to those which had proved so successful on the Continent. He felt sure there were numbers of Scottish and English teachers who would be glad to take advantage of such a school, and he hoped that these holiday courses would be inaugurated in the summer of 1905. M. Charles Martin, of Glasgow University, and Mr. D. McLeod, Morgan Academy, Dundee, contributed interesting papers on the place and function of modern languages in a school curriculum.

IRISH.

A SCHEME for the admission of women to degrees in Trinity College has been outlined. It provides that women shall be admissible to all lectures, examinations, and degrees in arts and in the medical school. All prizes in arts and the medical school are to be open to women except fellowships and scholarships. Non-foundation scholarships are to be instituted for women. The fees for men and women are to be the same. If a number of undergraduate women, not less than eight, belonging to the same collegiate class, desire to have lectures separately outside the college, it will be possible for arrangements to be made for the delivery of ordinary lectures outside by one of the teaching staff of Trinity College. The professors of the medical school are given the option of providing separate or joint lectures for men and women as they think fit, but women are to practise dissection separately. It does not appear that any arrangements have at present been entered into for providing a residential hall for women in any way comparable to those at Oxford or Cambridge, and perhaps there is no intention to that effect.

As was hinted in these columns last month, a good deal of the Irish Development Grant is to be devoted this year—and an educationist will admit, with a sigh, probably for many years to come—to other purposes than education. The Land Act claims £75,000, the Bann drainage scheme £1,000, and the Tralee and Dingle Railway £10,000. By way of education £10,000 is allocated to the building fund of the Marlborough Street Training College, £5,000 to the three denominational training colleges, in order to provide more room for King's scholars, and £3,000 to technical nstruction, to compensate for the loss of the former equivalent grant. The Chief Secretary has further declared in favour of a scheme for granting a second teacher in primary schools with an average attendance of 50 instead of 60, as at present, and this would absorb another £24,000. The Ulster members are not pleased at the neglect of Queen's College, Belfast, especially in view of the new Royal College of Science in Dublin, the foundation stone of which was laid by the King during his recent visit.

MR. F. PURSER, Fellow of Trinity College, Dublin, has given £4,000 to Queen's College, Belfast, to found a mathematical studentship in memory of his brother, the late John Purser, for many years professor of mathematics there.

THE Intermediate Examinations will begin this year on Tuesday, June 14th, and last till Thursday of the follo week.

THE Association of Intermediate and University Tea have published their "Plea for Reform" in secondary e tion in Ireland, dealing mainly with the position of assi masters in secondary schools. The pamphlet starts wit proposition that two things are essential to education: (proper course of instruction; (2) efficient teachers to car out. Experiments are being made on the first, which expected will finally succeed. With regard to the second, stated with truth that scarcely anything has been done, and urged that those wishing to teach should be qualified. For it is necessary that the universities should instruct and pre secondary school teachers by lectures on the science methods of teaching. In our opinion it would be bett have something more, viz., a definite school of pedagogi every university comparable to the law, or medical, engineering schools, and the recognition of which as would give dignity to the teaching profession.

THE association further recommends a period of probati a school, say one year, for an intending teacher, under supervision of inspectors and a headmaster. But besides q fications, increased emoluments are necessary. It is stated "few assistant-masters receive more than £150 per annum far the greater number have a salary below £100." Ten insecure, and there are no pensions. But the remedy for suggested by the association is far from adequate. It is gested that the Intermediate Board should audit the acco of the schools receiving intermediate grants, and it is pres that in that case managers would give assistant-masters a gr share of their grants. Does this imply that managers w the money, or that, even if assistants received more of the g their salaries would then be sufficient? Possibly the B would spend more in auditing the various accounts than assistants would gain. Can the Board justly and legitim demand to audit school accounts? In fact, though the In mediate Board might greatly help forward the questio efficient teachers, the matter is one for the Government, the difficulty will have to be solved by a broader scheme t that suggested. Meanwhile, much is due to the associatio ventilating and agitating on what it rightly terms "a matte grave national importance."

THE report of Mr. F. H. Dale, His Majesty's Inspecto Schools, of the English Board of Education, on Primary Edu tion in Ireland, has been published. We can only briefly su marise here a few of the main points. The premises of Irish town schools are markedly inferior to those in Englan both in the requirements essential for proper sanitation and their convenience for purposes of effective teaching. T country schools are not so inferior. In Ireland, unlike En land, the head teacher of every school must be trained, and t salaries of heads compare, on the whole, not unfavourably wi those of similar primary schools in England, but those of fu certificated or trained assistants are distinctly lower in Irelan The instruction in Irish schools, when compared with Engli is adversely affected by the multiplication of small schools, o unsuitably staffed and organised, the lack of any local intere except among the clergy, in primary education, the inadequa and faulty distribution of the staff in a large number of schools and the irregularity of the attendance of the scholars. Th report contains much information, not always pleasant reading enabling Irishmen to see their primary education as others see it, and laying facts before the authorities to which they can hardly close their eyes.

WELSH.

rence of representatives of all the County Councils been held at Llandrindod Wells, for the discus- Welsh education policy. This conference has been elsh Educational Parliament. That it should be a sign of the times, for apparently there were no s of education as such present. At any rate, one e the name of any teacher concerned with the ither a County Intermediate or Elementary School o express any opinion. Lord Kenyon was invited a representative of the voluntary schools. He ng to attend, but expressing a strong wish that ight be proposed which would make for peace conflicting parties.

D-GEORGE, to whom the conference looked for as moderate in tone. He suggested that a con- not essentially a political meeting. He said he to make concessions. If the Government were d to the Scottish Education Bill the words, "This tend to Wales," a settlement on these lines ought ed. The right of entry to give religious instruction absolute right, but he was willing that such permis- be given, if out of school hours. Once more Mr. ge suggested that biblical instruction might be the ettlement. One speaker at least spoke against any , and declared his view: "To the victors the ventually the resolution against the right of entry *ol hours* was passed with but one dissentient, thus question open whether right of entry might be of school hours. Mr. Frank Edwards announced ary to what had been reported, the Bishop of St. prepared to agree to popular control and to the f tests.

LIAM ANSON has explained in the House of Commons e of the Board of Education to the Local Education s of Swansea, Cardiff and Newport. These bodies onfine membership of their Education Committees regards two women representatives in each case) rs of their respective councils. The Board, however, t the Councils retain the power of co-opting two or ons in case at some future time they should be of hat without such co-option they should be unable to om their own body "persons of experience in educa- hose acquainted with the work of the schools in their These bodies point out that there is no such insistence w scheme of the London County Council Education e. Sir William Anson replies that the conditions of re essentially different from those of Swansea, Cardiff port.

neeting of the Aberdare Education Committee a sub- e suggested in report that teachers with university hould receive £5 per annum above the ordinary scale. on a motion that the sum should be £10 was proposed ried. Not, however, without protest. One speaker d that graduates may not be as good teachers as those degree. "They should pay people according to the one by them and should not spend money in this " There is no doubt that the resolution of the Aber- ucation Committee is an important one. It is of great nce that, in elementary school teaching, education tees should look for more highly-equipped teachers, and to find them is by recognising financially the teachers ther qualifications.

THIS necessity is recognised by the headmasters of the Welsh County Schools Association. They have just passed a resolution "that it is urgent that the amounts available for the salaries of assistant-masters and mistresses should be largely augmented." The average salary of assistant-masters in Wales was stated to be £120. The maximum for an assistant-master in Montgomeryshire was said to be £125, and in another county £110 or £120 was reported as the highest maximum. The consequence, of course, is that good teachers too often gain experience in the Welsh schools and quickly better themselves elsewhere.

THE Guild of Graduates of the University of Wales have appointed a committee to draw up a scheme for the production of a Welsh Dictionary. The proposal is to draw up a Dictionary "worthy of the Guild, worthy of the nation and worthy of the language." It was hoped that the Treasury might be reasonably expected to give £300 or £400 to promote the work.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Gautier, Voyage en Italie. Edited by de V. Payen-Payne. xvi. + 238 pp. (Cambridge University Press.) 3*s.*—This volume takes high rank in the Pitt Press Series, for the editor has regarded his work as a labour of love. Very full indeed are his notes; and they deal not only with difficulties of language, of which there are always a great number in Gautier's fascinating books of travel, but also with literature and art. Mr. Payen-Payne is trustworthy in both respects; we are particularly grateful for the copious and apposite quotations from Ruskin, Howells, Grant Allen and many others. The proofs have been carefully read, and the book can be recommended without reserve.

Elements of French Pronunciation and Diction. By Benjamin Dunville. xii. + 247 pp. (Dent.) 2*s.* 6*d.* net.—This small work is a very elaborate enquiry into the difference between English and French pronunciation. We have a first description of the physical production of the sounds of speech; then comes an account of phonetic symbols applied to English, and this is followed by a thorough explanation of the French vowels, which is copiously illustrated. As English people find their greatest difficulty in the imitation of these sounds, the space that Mr. Dunville gives to their consideration is not misjudged. How few English people realise that the essential difference between English and French vowels is that most English vowels are really diphthongs, whereas the French are pure sounds pronounced exactly the same from beginning to end. The consideration of the vowels is followed by that of the consonants, where we are shown many trifling differences between the two languages. Then comes a consideration of connected speech, with a useful section on *liaison*. But we doubt whether students who are not phonetic specialists will be able to assimilate all these rules completely enough to speak French fluently. It seems a very long way round to attain a simple object. Surely it would be better for even the poorest to spend some time in France, or to resign himself to the inevitable and continue to pronounce French words with an honest British accent.

Molière, Les Fâcheux. Edited by Mrs. D'Arcy Collyer. 34 pp. (Blackie.) 4*d.*—This edition of select scenes from "Les Fâcheux" is welcome, for the play is a delightful bit of

social satire, and helps to convey some idea of the men and women who formed the court of the *Roi soleil*. But for a few unimportant slips, the annotation is quite satisfactory.

Laboulaye, Le Château de la Vie. Edited by E. B. le François. 34 pp. (Blackie). 4*d*.—A charming fairy-tale, without an obtrusive moral. The notes are as brief and as much to the point as is usual in Blackie's capital series of Little French Classics. We have noticed only a few inaccuracies: *e.g.*, the note on *plus de* (p. 6, l. 14), *un bouchée* (note on p. 16, l. 38).

A Book of French Prosody. By L. M. Brandin and W. G. Hartog. xvi. + 281 pp. (Blackie.) 3*s*. 6*d*.—There will soon be no excuse for the ignorance or neglect of French prosody, which has so long been a reproach to the higher teaching of French in our schools; for the number of books devoted to this subject in recent years is considerable. The last to appear is written by the French Professor at University College, London, and his assistant, which is of course a guarantee that it is a careful and satisfactory piece of work. Rather less than half the book is given to the study of prosody, the rest consisting of a very good selection of poems and extracts from the thirteenth century (Aimeri de Narbonne) and the fifteenth (Villon) down to the present day (Hérédia and Régnier). We have no space here to discuss a certain number of details in which we disagree with the authors, such as the misleading terms "vowel-alliteration" and *e feminine* and the hideous "isostichic," nor to dwell on slight inaccuracies in phonetic transcription, slips in the printing (*e.g.*, *régistre* on p. 19, *fort* for *font* on p. 63, *Frosnie* twice for *Frosine* on p. 119), the omission of Louise Labé's name in the history of the sonnet (p. 113), and affectations like *minores poetae* and "*Sic transit gloria mundi!*" On the whole, the book forms a very excellent introduction to a difficult subject.

Montaigne, Essays. Edited by E. C. Goldberg, 40 pp. (Blackie.) 4*d*.—This is a very good selection indeed, carefully printed and well annotated. The verb *oyer* (note on p. 20, l. 18) is new to us.

W. Hauff, Die Geschichte von Kalif Storch. Edited by Aloys Weiss. iv. + 46 pp. (Hachette.) 6*d*.—This slim volume belongs to Hachette's Series of Popular German Authors, and contains an introductory note, the text of Hauff's well-known fairy tale (with three pages of "die Karavane" which might well have been omitted), a good German-English vocabulary including notes, and giving only those words which in the text are marked with an asterisk, some grammatical questions of doubtful value, and a set of questions to be answered in German some of which are queerly worded (*e.g.*, *Betreffs welchen Zusammenhangs spricht der Kalif von einem Rätsel?*). We do not much like the general plan of the volume, but do not deny that on the whole it has been carefully carried out.

Immermann, Die Wunder im Spessart. Edited by Aloys Weiss. 52 pp. (Hachette.) 6*d*.—This queer story, which is an episode of the *Oberhof* and "satirises the idealistic philosophy of Hegel," is little suited for class use. Dr. Weiss has edited it with his customary thoroughness, but he is not always happy in his English renderings. Thus, "wavelike commotion" will hardly do for *Wogenschlag*, nor "the most compulsory connection" for *das Zwingentste*, nor "ruins of dross" for *Schlacken-trümmer*, nor "purest hues" for *der Sittichglanz*. We do not say "to stare into *the* space," nor "such an age is something said." The questions for oral practice are also indifferently worded: *e.g.*, *Einer der Vögel erklärt, der Förster zu sein; welcher war es?* and *über wen stürzen Gesichte, wie der Alte sagt?*

Clémence Saunois, La Moqueuse. iv. + 32 pp. (Ha 1*s*.—A very amusing little comedy in one act. The ch are all female, and it would lend itself admirably for performance by the pupils of a good French class. Tl are adequate; but we do not like "I look after the vi for *je m'occupe des refraîchissements*; and *enragée persi* not well rendered by "you who are so mad on chaff."

F. Goebel, Rübezahl. Edited by D. B. Hurley. xi. + (Macmillan.) 2*s*.—This recent addition to Siepmann's I tary German Series contains a number of stories ab mountain spirit Rübezahl, told in excellent Germ supplied with good notes. It makes a capital readi for the third year of instruction, and can also be recom for private reading. The text is well printed, and v noticed few slips (*Brod* for *Brot* on p. 71; *Bruder* p. 30, l. 1, should obviously be *Bruderkind*, and is not a "*Bruder* undeclined"). Goebel's excessive use of might well have been corrected. Mr. Siepmann's "s some particles" is well put together and should be usefu vocabulary is good; there is also an appendix for pur retranslation.

Classics.

Quintiliani Institutionis Oratoriae Liber X. Ed W. Peterson. xvi. + 130 pp. (Clarendon Press.) Our recommendation is not needed for this book, the i tion and notes of which are just what they should be. D son's large edition has been long recognised as a standar and the value of the abridgment is shown by its having g a second edition. There are thus still a remnant who l bowed the knee to Baal. To them, and to the school classical studies still survive, we commend this editio admirable literary and rhetorical treatise, in the hope may help them to appreciate the beauties of fine letters.

Horace for English Readers. Being a Translation Poems of Quintus Horatius Flaccus into English Prose. E. C. Wickham. vii. + 363 pp. (Clarendon Press.) net.—Dr. Wickham has been cautious to take warning sad fate of his numerous predecessors who have atte Horace in English verse. Of course, the chief charm of as a poet lies in his exquisite finish and technical skill; craftsman of the same kind as Virgil and Tennyson, l far less intellectual force than theirs. His "odes" put prose are often commonplace. No one will maintain English reader can get the real Horace in English prose perhaps a modern controversialist *θέσιν διαφυλάττων*, or i of the facts. However, the translator has done his b only by a rendering often graceful and always readable, simple explanatory notes. And at his best Dr. Wick very good, as will be gratefully conceded by the genera young students who have been helped to appreciate by his edition of the text. The rendering is studiously and is well free of purple patches. On the whole, if an reader wants to know the substance of Horace's writi will find it here. We do not think that Dr. Wickham so happy in the "Satires" and "Epistles." Here th lator needs not a delicate sense of grace, but a v colloquial, an Elizabethan rather than a Victorian voca And this Dr. Wickham has not. However, the renderin no means to be treated contemptuously; it is clear a from ponderosity, if sometimes it lacks weight. This is place for a discussion of controverted points; probabl students will find something to disagree with, but the tr has also been editor, and his choice is always defensible book is neatly printed and well got up.

of the Ancient Greeks. By Charles D. Shaw. xii. + (Ginn.) 2*s.* 6*d.*—We are always glad to hear the old ories told again, and to recall the delight of childhood it we heard them. It is difficult not to make them g, but there are degrees of interest. Mr. Shaw is, in on, too abrupt. The tales are very short; we always e. It is true this is a virtue, looked at in one way, lo feel a little lack of detail and connexion. Thus, ophonius, we have a bare statement of the "Rhamp- story, which has nothing essentially to do with the Much more of interest might have been said about nd this paragraph omitted altogether, or told in the g form which it has in Herodotus. Mr. Shaw is also s correct; for he says Apollo was the Latin name of (p. 3), and he transfers the Vestal Virgins to Greece But we must not be ungrateful; the book is very and will make a good reader for young children. It rinted, and has several illustrations. Half the stories ological and half are historical. Amongst other things, glad to see (for the first time in a children's book) given a proper *pithos* to live in, instead of the usual An index gives the pronunciation of the proper names too anglicised. There is no need for children to be iat Cecrops is pronounced "Sē'krops," Geryon as " Cleobulus "Klēōbū'lus," Artemis "Ar'tēmis," 'ros." The quantities need not all be wrong, and it easy for a child to say "Kēkrops" as "Sēcrops." ies already anglicised the case is, of course, different. blot on the book.

henes on the Crown. Edited by Prof. W. W. Good- . + 296 pp. (Cambridge University Press.) 3*s.* 6*d.* ook contains the substance of a larger edition, published rs ago by Prof. Goodwin. In fact, there is little between the two: an essay or two omitted, and a few s added. The notes are well suited to the use of ms in schools; but it is a pity they are printed at the e page, which makes them less useful for school work. admirable; and it is difficult to speak too highly of s, historical and other, which accompany the book. act, a guide to the orator's public life and principles, t embodies research which has not yet found its way ol histories, it or its big brother will be indispensable dent.

Edited Books.

in Shakespeare. By Prof. Churton Collins. 380 pp. le.) 7*s.* 6*d.*—In this volume are collected nine essays ferent aspects of Shakespeare and the questions con- im; and, multitudinous as Shakesperean literature of rank and value has become, this book is one which dern scholar ought to place on his shelves. The essays rhaps unequal interest, one on the text and prosody of appealing only to critical scholars, and one on Shakes- lassical learning mainly to the same class. The discus- is indebtedness to Holinshed and Montaigne are well out, and the curious questions arising out of Shakespeare's onably accurate knowledge of law are worthy of atten- Prof. Collins expounds it. To some readers the ' of the volume will seem to be the essay—and it is a one—on the Bacon-Shakespeare controversy; but the mulating of them all is the third, which deals with the between him and Sophocles. But, in saying that both eare and Sophocles understood the practical "wisdom doxy," would not Prof. Churton Collins have been dvised (we say it with all submission) to have written mity?" It is difficult to think of Shakespeare as really t. The defence of "Titus Andronicus" as an early but authentic play, is worthy of great attention, challenging as it does, nine-tenths of received critical opinion on this point. Prof. Churton Collins states his case very ably.

English Poetry. Parts I. and II. By Prof. W. H. Woodward. (Cambridge University Press.) 2*s.* each.—These two well-printed little volumes are the result of wide reading, and they undoubtedly carry on the example set by Mr. Palgrave in a book which has long since been an English classic. The pity seems to be that, though Mr. Woodward could have given us so much more that is suitable for "preparatory and elementary schools," or for "secondary and high schools," he has padded out the little books with "The Royal George," "Boadicea," Byron's "Waterloo," "Horatius," and "The Morte d'Arthur." All these are, of course, excellent; but why not give them a little rest? With this grumble we welcome volumes which contain a fable (but only one fable) of Gay, "Willow the King," "The Butterfly's Ball," "The Old and the New Courtier," and "Forty Years On." There is no doubt that boys will be delighted with that part of these volumes which is least immortal. It is a mistake to give young children too many pearls to play with.

Shakespeare's Hamlet. By A. W. Verity. lxxi. + 339 pp. (Cambridge University Press.) 3*s.*—To call this an edition for students is the only appropriate description of a volume which carries one into the highest regions of critical study. Only advanced scholars are likely to make use of it, but these will find it a mine of learning. Mr. Verity does not merely rest content, as voluminous annotators are often wont to do, with presenting every possible view of a subject in a gracefully non-committal sort of way. On the contrary, a reader is in no doubt about the editor's opinions anywhere, while still the whole range of scholarship is thrown open to him; and he may disagee if he chooses to do so. Too much praise cannot be given to this edition. It may be described as ideal in its method, its tone, and its learning.

Macaulay's Essay on Bacon. By D. Salmon. xxvi. + 252 pp. (Longmans.) 2*s.* 6*d.*—The editor is much struck by the fact that Macaulay was a good, as well as a great, man. Well, well! perhaps some day the great Macaulay bubble will be pricked, even so far as school editions go. The introduction to this volume is not a remarkable piece of work; but the notes are. They may be unreservedly recommended for range, exactness, and clearness. There are some wood-cuts sprinkled about these pages; but they are not impressive.

Scott's Kenilworth. By W. K. Leask. xv. + 444 pp. (Blackie.) 1*s.* 6*d.*—This is mostly Scott. The notes are not over-done and they are sound and accurate.

Notes to Palgrave's Golden Treasury. By J. H. Fowler and W. Bell. 250 pp. (Macmillan.) 2*s.* 6*d.*—It is a distinctly happy thought to put together in one bulky volume all the notes that Messrs. Fowler and Bell have made to Prof. Palgrave's epoch-making anthology. Now those who possess that collection in its original non-educational form can have the advantage on easy terms of possessing a singular body of scholarly and critical erudition connected with the poems contained in it in a handy form. Concerning these notes in their intrinsic worth we have already written; but we heartily commend this collected edition of them.

English Poems. Books I. and II. By J. G. Jennings. 78 pp. and 112 pp. (Macmillan.) 1*s.* and 1*s.* 6*d.*—The selections are made with care and annotated with simplicity. Where no other collection is already in use, this will make a good beginning for young people. Many things comparatively little known have been included in both volumes.

Tennyson's Dream of Fair Women, &c. By F. J. Rowe and W. T. Webb. xlix. + 152 pp. (Macmillan.) 2*s.* 6*d.*—Seven of Tennyson's poems are included in this collection, and they are all among his best-known productions. The introduction is a very careful piece of work indeed, and the analysis of the poet, as man, as poet, and as artist, is singularly comprehensive and penetrating. In these respects it is one of the best summaries for educational purposes which we have seen, and the criticism of Tennysonian verse is equally good. The section which deals broadly with the "Idylls of the King" in order to illustrate the Coming and the Passing of Arthur is scholarly and clear, and very full. The notes discover to the reader an immense amount of unfamiliar ground. The notes to the other poems, "Ulysses," "Dream of Fair Women," "Funeral Ode," "Ballade of the Revenge," and "The Lotos Eaters," are equally good.

Style in Composition. By W. J. Addis, M.A. ix. + 105 pp. (Allman.) 2*s.*—We have read this book with considerable pleasure, and can recommend it to students of literature and of composition who are reading for London Matriculation and other examinations of a similar standard.

Old Testament History for Schools. By W. F. Burnside. 333 pp. (Methuen.) 2*s.* 6*d.*—We have no hesitation whatever in recommending this volume as the best of its kind now in use. It is written "for schools," hence some limitation of its nature is assured, and it will not attempt rivalry with a work like Mr. Ottley's "History of the Hebrews." But within its limitation it is singularly good, and ought to achieve its professed object, which is to popularise the study of Old Testament history in intermediate forms. The narrative is well arranged as to heads and divisions, and the earlier part can be followed with ease. Throughout the volume the point of view is modern, but sufficiently cautious also.

Spenser's Faëry Queene. Book I. By Prof. W. H. Hudson. xxxii. + 279 pp. (Dent.) 2*s.*—The distinguishing features of this edition are the brevity of the introduction and the marvellous compression of the notes. Yet both are full and clear enough for all reasonable purposes. The introduction, in particular, is wonderful in its way, for it suggests everything without saying much. Needless to remark, also, the general "get-up" of this volume has artistic finish. We rather miss the customary and delicate illustrations.

History.

A History of Modern England. By Herbert Paul. Volumes I. and II. 450 + 446 pp. (Macmillan.) 8*s.* 6*d.* net, each.—By almost universal assent, our historical studies, at least for purposes of examination, used to end with 1832. With the passing of the Reform Acts of that year, it was considered that contemporary history began, or that part of history which for various reasons, want of necessary knowledge, difficulty of perspective, &c., was considered undesirable for purposes of education. But of late years this has generally come to be regarded as unsatisfactory. It left much untouched which was worth knowing—the development of democracy at home, the growth of our Empire beyond the seas. And of late years, our school books have been constantly brought up to date with more or less success. Specially has the passing of the nineteenth century, of Queen Victoria and of Mr. Gladstone helped to throw the events which some of us have personally watched into the region of history. Histories "of our own time," the "Greville Memoirs," Mr. Morley's "Life of Gladstone," have supplied much material, and we therefore welcome any serious contribution to the possibility of telling the story of the last century. Such a work is Mr. Paul's "History of Modern England," which is to be completed in five volumes, and of which the first two are now to hand. He begins with the year 1846, and t volumes cover the next twenty years. He deliberate the chronological order as far as possible with all its a and disadvantages, much of the latter being removed index to each volume. There are supplementary ch literature, science, and ecclesiastical matters. We p fuller judgment till the other volumes have appeared. while we commend the work for the school library as a work for the period covered.

History in Biography. Vol. I., Alfred to Edward I A. Lees. xiv. + 234 pp. (Black.) 2*s.* 6*d.*—We l viously noticed in THE SCHOOL WORLD the second, t fourth volumes of this series. This volume now com and the series affords a continuous history of England beginning to the "Revolution" of 1688. It is an book, written from a knowledge of the latest mat the stories are fully and interestingly told. But we n the failure to make biographies tell the whole story is much in this volume beyond the lives of its hero chapter on Alfred, for example, begins with a paragra stone and bronze ages. Twenty pages of small ty summary of English history, 871-1307. There a illustrations, besides an index and a list of chief autho

A First History of England. Part V., 1603-1 C. Linklater Thompson. (Horace Marshall.) 1*s.* 6 Thompson's name is already so well known as that o and enthusiastic exponent of the newer principles of as applied to history and literature that every text-bo she writes commands attention. The present little v far as subject-matter is concerned, seems well suited t "first" book of English history for scholars who have say, fourteen years of age, and have received good ora tion up to that date. But it would not be very suitable fo either younger or older. For those younger too many hard words are used and the scale of the work is For those older it does not go deeply enough into th meanings of things. A special and most valuable feat book is the excellent portraits of the great men of t with which it is illustrated.

Mediæval and Modern History. Part II. The Mo By P. V. N. Myers. vii. + 650 pp. (Ginn.) 6*s.*— part of Mr. Myers' book was noticed by us in THE WORLD in 1902. We now heartily welcome the sec It treats of European history from the end of the fifte tury to the present day. These four centuries are di two periods, that of "The Reformation" and that Political Revolution," the approximate date of being 1648. In each period, the history of each coun in separate chapters, except, of course, for the perio French Revolution and of Napoleon. The consequen the international history is the least satisfactory par Myers's story. The reader does not get a clear idea o waged and the treaties that ended them, and the perio the Peace of Utrecht and the outbreak of the War Austrian Succession" is entirely omitted, In the ch English history the book is not quite up to date in its of the constitutional development. The old Whig the supremacy of Parliament was attained in 1688, therefore George III.'s action was unconstitutional, is tained, as against the newer view that 1832, rather t was *the* year of revolution. These defects, for so them, are probably due to the American point of vie as the evident prejudice against "absolute monarchies will dwell no further on these slight blemishes or on few) single points in which the work is not correct would we turn to praise the clearness with which t

, the breadth of view which it exhibits, the carefulness and ness of the information given, specially in the notes; the ce of prejudice in its treatment of religious questions. The best part of a good book is its last chapter on European ansions in the nineteenth century, and the, too brief, pages hich the author states his "conclusions." Let the reader k these forty pages with much attention and then turn to map which illustrates them to realise the present condition the world. Though we knew the facts before, yet it was astonishment that we learnt at a glance how little of the able globe is now non-European. Such a treatment of the ct helps one to understand the keenness with which the nations of Europe are exploiting China, Persia, and the ish Empire. There are altogether sixteen maps, an index, to each chapter a bibliography, which, perhaps necessarily, fined to books available only in English.

Story of the East Country. By E. S. Symes. 255 pp. ld.) 1*s*. 6*d*.—Readers of THE SCHOOL WORLD already Mr. Symes's "Story of the North Country," and they nd this book as pleasant and profitable as the other. It is illustrated, and contains the history and traditions con- d with the eastern counties. The maps are not up to date matter of railways, and we think the author's theory of Norfolk Broads is mistaken. They are *not* generally "broad s of rivers," but lie curiously alongside the streams, being cted with these by a narrow outlet. Bunyan did not write grim's Progress" during his twelve years' imprisonment. hese are trifling blemishes in an otherwise useful and ting book.

First Book of Stories from History. iv. + 120 pp. kie.) 10*d*. *A Second Book of Stories from History*. 128 pp. (Blackie.) 1*s*. *British History in Periods*. IV. iv. + 216 pp. (Blackie.) 1*s*. 4*d*. Book V. iv. + p. (Blackie.) 1*s*. 6*d*.—These seem to be four parts of a of historical readers. They are illustrated with coloured ther pictures. The first two are quite elementary, and in lists of words for spelling. The other two are more orical," and contain summaries of the lessons and explana- notes. The history in these two is correct except for some ion in the granting of Magna Carta, and all four are y printed. They are useful for junior forms.

dations of Modern Europe. By E. Reich. vii. + 262 pp. 5*s*. net.—This book consists of twelve lectures de- by Dr. Reich last year in the University of London, and a commentary on European history from 1763 till 1871. ch-travelled Hungarian author is known as the upholder is paradoxes in history, and his latest work maintains utation in this respect. He holds, for example, that the colonies did not win their own independence, but that owed this to the help of the Bourbon powers. This hos- of France and Spain he attributes to the policy of m, who is therefore finally responsible for the loss of olonies. Napoleon is apparently his hero. It would have well for Europe if it had submitted to him, and Spain cially was foolish in opposing him in 1808 and following . England did *not* save Europe, nor indeed could Europe saved herself from him, if he had not become his own y in 1811 onwards, and if France had not, most ungrate- , abandoned him in 1814. Next to Napoleon, in Dr. ch's opinion, comes Bismarck, who united Germany, and aps Metternich, who succeeded for so long in taking advan- of the folly of the peoples in the War of Liberation. Italy uld have worked out her own unity instead of accepting nch and Prussian help, and Austria committed her great y in not joining with France in 1870-71. In general, the book is a glorification of the militarism on which Europe is now based. They that do *not* take the sword, according to Dr. Reich, shall perish. It is therefore evident that, to those who know the period fairly well, this book, with its new views of things, some probably true, others which one cannot accept, will prove of great interest, and will stir thought.

Geography.

Johnston's Simplex Wall Atlas of the British Empire. Six sheets. (Johnston.)—The sheets commence appropriately with two maps contrasting the British Empire of 1837 with that of to-day. These are followed by maps of the West Indies and Canada, Australia and New Zealand, S. Africa and India. All are clear, none are too crowded with names; they may, in consequence, be recommended to teachers, especially as they are up-to-date and printed in clean bright colours. Important towns are very prominent; coast lines are picked out in blue and very bold outline. Names are small and visible only to the teacher. Rivers are much exaggerated—a necessity, we think, for the younger classes—and, in consequence, occasionally a little out of drawing; witness the Zambesi's southern bend on Map I. The insertion of certain railways strikes us as somewhat arbitrary; why, for instance, is the Trans-Siberian connection not shown to Port Arthur as well as to Vladivostok? Why does the Trans-Caspian stop at Bokhara? And why is the Trans-Andine shown as a completed undertaking? The greatest defect, however, we should note is the insertion of the useless, and, in many cases, actually deceptive labels assigning certain products to certain localities. Unless the teacher—and taught—are wide awake, they will run the risk of putting asbestos down as mined round Quebec City, and potatoes as grown only near Regina in the whole of Canada, sugar and rum as products of the *hinterland* of British Guiana, wheat-growing as the sole and single industry of all South Australia except the northern territory, and coal mining as the *raison d'être* of Natal. For the rest, the maps are tipped, as to their lower edges, with metal, and are provided on the top with two strong clamps, wherewith to attach the series to a blackboard or stand. They are thus a thoroughly serviceable and workable set, and—always excepting the "industrial label"—should be most useful to any teacher who believes in oral work.

The Royal Wall Atlas. No. vii. Africa. (Nelson.)—This Atlas also contains six maps, viz., Africa Physical and Political, the Centre and South, the North-East, the North-West, and Industrial South Africa. The three middle maps we like: they are clear, and taking to the eye. The others appear "muddy," whether regarded close at hand or from a distance; they are coloured in one tint with various gradations, and, as a natural consequence, the river systems show up hardly at all. Nor do the exceedingly strong lines of oceanic communications tend to simplify matters. To our thinking, there is a general air of confusion in these three maps, which goes far to spoil the whole set. The "industrial" map is peppered over with products, an unsatisfactory system, and, in many cases, actually misleading. Why, by the way, in the plethora of products marked over South Africa is there no indication of Wankie's coal, and the copper deposits just north of the Zambesi? Are they not to prove the mainstay of the Bulawayo-Victoria Fall section of the so-called Cape to Cairo trade route? It is surely time, too, that some of the important railway enterprises in West Africa should be creeping into up-to-date maps and atlases. But, perhaps, we are hypercritical. As to the utility of "Wall Atlas No. vii.," we must leave teachers to decide amongst themselves whether the undoubted merits of maps 3, 4, and 5, outweigh the defects of numbers 1, 2, and 6.

Asia. By L. W. Lyde. iv. + 188 pp. (Black.) 1*s.* 4*d.*—The latest addition to Prof. Lyde's series of illustrated geography readers is, like its predecessors, attractively produced, and contains a great deal of useful information. It is provided with a summary of points to be noted specially. To those teachers who think that geography can be taught satisfactorily by means of a reading-book it may be confidently recommended.

The World and its People. With special reference to the British Empire. 416 pp. (Nelson.) 2*s.*—Messrs. Nelson and Sons have here produced a geographical reader which is a marvel of cheapness. It contains thirty-two coloured plates and an equal number of monochrome illustrations. Though rather difficult in parts, it is, on the whole, interesting, and should prove suitable for the lower part of secondary schools.

Geography of Great Britain and Ireland. By A. G. Haynes. 66 pp. With six maps. (Relfe.) 8*d.*—The chief facts are tabulated in a manner convenient for committing to memory easily. The booklet is intended specially for candidates preparing for examinations.

Science and Technology.

Second Stage Botany. By J. M. Lowson. viii. + 452 pp. (Clive.) 3*s.* 6*d.*—Students of botany, preparing for the second stage examination of the Board of Education, have hitherto been handicapped by the difficulty of finding, in a single volume of moderate size, a really satisfactory treatment of the subjects of their syllabus. Mr. Lowson's book supplies the want. It is divided into four parts, which deal respectively with general principles, the angiosperm, vascular cryptogams and flowering plants, and the lower cryptogams. The book is good throughout, but will be found especially valuable for the descriptions of the prescribed natural orders, and for its clear discussion of the relationships between vascular cryptogams and phanerogams—the parts of the syllabus which the ordinary student finds most difficult. The illustrations, 312 in number, are excellent.

Zoology. By Buel P. Colton. *Part I., Descriptive,* x. + 375 pp., 4*s.* 6*d.*; *Part II., Practical,* xvii. + 204 pp. 2*s.* (Heath.)—The method here adopted of introducing young students to the study of animals is admirable. Part II. gives directions for field work and for the laboratory study of live animals, as well as for general dissections; while Part I. contains a connected description of the principal groups of animals, based upon the results of the observations suggested in Part II. The treatment is strictly elementary, however, and does not carry the student into much morphological detail. Part I. is abundantly provided with illustrations, many of which are excellent reproductions of photographs. We are not in entire sympathy with the author's attempt to Anglicise (or should it be, to Americanise?) technical terms. "Ganglions" is, perhaps, permissible with very young students, but we protest emphatically against the introduction of "pleurum" and "epimerum."

Flowers of the Prime. By F. H. Shoosmith. 45 pp. (Charles and Dible.) 2*d.* net.—It is difficult to understand for whom this pamphlet is intended. Children will not understand it, and it is scarcely suitable for adult readers.

Senior Country Readers. III. By H. B. M. Buchanan. viii. + 293 pp. With 143 illustrations. (Macmillan.) 2*s.*—The intelligent country-boy or girl who studies this book before leaving school should be of immediate use on a farm or in a kitchen garden. The abundant practical information, evidently written by one who knows his subject from personal experience, is presented in a way to appeal to the best pupils of a rural school. The illustrations are uniformly excellent. The book deserves and will, we think, secure a wide popularity.

Mathematics.

An Elementary Treatise on Conic Sections and Algebraic Geometry. By G. Hale Puckle. vii. + 379 pp. (Macmillan.) 7*s.* 6*d.*—In attractiveness and stimulus there is probably no treatise on conic sections that rivals Salmon's; good as the later school text-books are for special purposes, they do not possess the charm or the insight so characteristic of Salmon's work. As an introduction that follows the main lines of Salmon's book, Mr. Puckle's elementary treatise has won for itself a well deserved reputation. In this issue several changes of a minor kind have been made, chiefly in the reduction of the general equation and in the methods of finding the foci, eccentricities and axes. The form given to the equation of a directrix in § 294 is worth noting as being probably new. It is with some diffidence that we raise the question whether, in view of the introduction of elementary graphs at an early stage of the pupil's instruction, there should not be some change in the formal text-books of analytical geometry. The fundamental notion of the connection between an equation and a curve having been previously grasped, it should surely be possible to diminish the amount of text and to lay more emphasis on the geometry of the subject. After all, it is geometry and not algebra that is the subject of study; algebra is here a means to an end. One has the feeling that the student is expected to get up his knowledge of the properties of conics from books on geometrical conics; it is very instructive to compare, for example, the number of diagrams in a work on analytical and in one on geometrical conics. For elementary work we see no good reason for the separation of the two methods, and we think that a book that will combine the two, employing the usual geometrical methods when these are simpler than the algebraical, but frankly recognising the geometrical contents of the algebraic symbolism, is still a desideratum.

Strength and Elasticity of Structural Members. By R. J. Woods. xi. + 310 pp. (Edward Arnold.)—In works on the subject which forms the title of this volume there is usually a marked absence of those numerical examples which are found so useful in giving definiteness to the conceptions of elementary mechanics. It is doubtless the case that these examples are too often of the purely academic type, but at the same time experience has proved that the notions of the average student remain vague and hazy until definiteness is given to them by means of numerical examples. These remarks apply with special force to the very difficult subject of elasticity; in view of the great practical importance of that theory, it is essential that all formulæ should be illustrated by applications to particular cases, and that the assumptions, frequently hard for the beginner to understand, should be tested by comparison with the results of experiment. The book under notice should prove a real boon to students if for no other reason than the large number of numerical exercises it contains. It is written in a clear and interesting style that will appeal to every student who has a moderate acquaintance with mathematics; the proofs of the standard theorems do not differ in the main from those to be found in every good text-book, but they are well illustrated by good diagrams and numerical examples. Considerable use is made of graphic methods through the book, and the chapter on Graphic Statics, though short, is very clear. In all respects this work seems thoroughly adapted for a beginner's course in very difficult subject.

Elementary Geometry. By Frank R. Barrell. Section II. ii. + 285-360 pp. (Longmans.) 1*s.* 6*d.*—This Part contains the substance of Euclid's eleventh Book, including much that is omitted in recent editions of Euclid, but treats also of the sphere, right cone and cylinder. Solid geometry has been too long neglected in schools, but we may hope that the recent

changes will help to repair that neglect. In any case, with a book like this to their hands, teachers have no excuse for giving solid geometry the go-bye. In an exceedingly simple yet, on the whole, very thorough manner, the leading propositions are [illegible] developed; special notice should be taken of the excellent diagrams, which remove to a very marked extent the difficulties felt by beginners in first approaching the subject. Chapter xix., on the surface and volume of solids, is compact yet full enough for a first course, and is admirably clear in its presentation; the same may be said of Chapter xxi., which treats of the sphere, though the exceedingly instructive note on p. 344 might have been clinched by an accurate definition of a limit which would have enabled the beginner to fill up similar gaps elsewhere to that to which the note directs attention. A few more exercises would add to the value of a book which is otherwise a very good.

Digesting Returns into Summaries. By J. Logan. 96 pp. (Blackie.) 1s. net.—Students preparing for Civil Service and similar examinations in which the subject of digesting returns forms an important element will find here a good and varied collection of exercises. The hints to candidates are sensible and, if properly attended to, should go far to insure success.

The Tutorial Statics. (3rd Edition). By W. Briggs and G. H. Bryan. viii. + 366 pp. 3s. 6d. *The Tutorial Dynamics* (2nd Edition). Same authors. viii. + 416 pp. (Clive.) 3s. 6d.—In the present edition these two books have received additions at various places, but the general character remains. Though many of the examples are of the purely academic type, they will be suitable for many of the current examinations; great pains have been taken with the text to meet the difficulties that confront beginners, and any student who masters the books should be ready to face the examiner with confidence. We think, however, that the teaching of mechanics stands as much in need of overhauling as that of geometry, and we may hope to see the reform inaugurated within a reasonable time.

Proell's Pocket Calculator. (Sole agents: John J. Griffin and Sons.) 3s. net.—The Calculator consists of two parts, the lower part called "The Card," and the upper part, which is transparent, called "The Film." The principle on which it is constructed is the same as that of the ordinary slide rule, the scale of logarithmic distances being printed on both the card and the film in ten equal lines. It is claimed that this Calculator, though small enough to be carried in the pocket (card and film measure each about six inches by four), will give results with the same accuracy as an ordinary slide-rule nearly four feet long. Whether this claim be borne out in practice or not, we may say that, after trial, we have found a surprising accuracy in the results. Those who are interested in devices of the slide-rule type may find it worth while to test the Calculator. (A more convenient method of stowing away the pointer might surely be devised.)

Miscellaneous.

A Modern School. By Paul H. Hanus. x. + 306 pp. (New York: The Macmillan Co.) 5s. net.—Prof. Hanus here collects articles on educational topics he has contributed in recent years to various American magazines. The reader has not to proceed far to learn that Prof. Hanus is no great believer in that secondary education which is mainly classical. To quote one of many similar statements: "The first step towards realising our revised conception of general culture through secondary education is, therefore, to admit frankly that general culture means much more to-day than classical scholarship; that it may, indeed, mean something entirely different. The next step is, I think, to admit as frankly that classical scholarship, *i.e.*, literary appreciation of the classics, is not attainable anyway in the secondary school." Prof. Hanus thinks, too, that a secondary school course of four years' duration is inadequate, and demands six years for its satisfactory completion. Incidentally the reader picks up interesting confessions about American schools which will go far to dispel a common belief in this country that education in the United States is nearly perfect. Thus, "so far as I know, we have nowhere in the United States a thorough-going medical inspection of schools, with appropriate authority to correct abuses wherever found." Or again, "it is no exaggeration to say that unsanitary school buildings, with respect to light, heat, and ventilation, abound. Suitable physical training, seriously pursued under wise direction in our schools, is still . . . almost universally conspicuous by its absence." Then much help is given in the book towards understanding the American "elective" system of studies. In fact, the volume may be commended to teachers as interesting, suggestive, and stimulating. It will enable the reader to see many familiar problems in quite a new light.

The Evolution of the Elementary Schools of Great Britain. By James C. Greenough. xxxii. + 265 pp. (New York: Appleton). 1.20 dollars.—Dr. Greenhough provides a concise, readable account of the development of English elementary education up to the passing of the Education Act, 1902. The main part of the book was written before this Act was passed, so that Dr. Greenough has contented himself with a few brief remarks on it and has printed the full text of the measure. The London Education Act is not, of course, mentioned. It is to be hoped that the opportunity of a new edition will be given to the author to show what it is hoped the new Act will accomplish for elementary education in this country. The book should be especially useful to American students of education.

The Secret of Herbart. By F. H. Hayward. xvi. + 96 pp. (Sonnenschein.) 2s.—As has been stated in these columns before, in his "Talks to Teachers on Psychology," Prof. James remarks, "The conscientious young teacher is led to believe that the word 'apperception' contains a recondite and portentous secret, by losing the true inwardness of which her whole career may be shattered," and he goes on to explain that the forbidding term means nothing more than the act of taking a thing into the mind. Dr. Hayward thinks differently. For him the word does contain a secret, and he maintains that, though not recondite, the secret is immensely portentous. His latest book is intended to show that the apperception doctrine "has well-nigh incalculable moral, social, and spiritual implications." Dr. Hayward is in real earnest, and speaks with a plainness often embarrassing. His main contention will meet with the approval of most thoughtful persons, but, like other enthusiasts, Dr. Hayward is often guilty of excesses. To express shortly the impression the book leaves behind, it may be said there is too little *suaviter in modo*, a great deal too much *fortiter in re*.

Practical Morals. A Treatise on Universal Education. By Dr. John K. Ingram. xii. + 167 pp. (Black.) 3s. 6d. net.—Comte had intended to write a treatise on universal education, "and in 1857, the year of his death, he drew up a plan of this treatise, and communicated it to his principal disciples, who preserved it with religious care"—to quote Dr. Ingram's preface. The present volume, based upon Comte's plan, attempts to make clear, from the Positivist's point of view, the object and content of education. The author's position may be indicated in his own words: "As the exposition proceeds, it will become plain that, without the anticipatory assumption of a Positivist society, a complete and homogeneous scheme of education could not have been presented."

Ludgate Story Readers. Edited by R. R. C. Gregory. (Routledge.) Various prices.

(1) "An Introductory Story Reader." 196 pp. 6d. This book, well printed and very well illustrated, contains the stories of "Five Little Pigs," "Little Bo-peep" and "Mother Goose." The comedy in the illustrations should by itself make the introductory volume popular.

(2) "Stories by Maria Edgeworth and others." 160 pp. 8d. Nine stories are in prose and eight poetical pieces are added. Most of the stories are short, but perhaps they are quite long enough for the very young child. The illustrations are by Charles Robinson.

(3) "Stories by Mrs. Sale Barker, Julia Goddard and others." 1-160 pp. 10d. Still in large type, the reading progresses, most of the pieces being unfamiliar. The grading in this part of the series is well done.

(4) "The Story of a Wolf." By Geraldine Brett. With other tales. 1-188 pp. 1s. At this stage the stories begin to have a literary flavour, and in the verse some admirable old favourites are introduced.

(5) "Stories from Andersen and Grimm." 1-215 pp. 1s. 3d. The choice of pieces is again very happy, and the illustrations are bold and taking. The biographies of the writers—Andersen, Grimm, Macaulay, Blomfield, are in their right places—at the end of the book.

(6) "Feats on the Fiord" (1s. 6d.) and "The Boy Cavaliers" (1s. 6d.) Of these little need be said. They are well known works, and here we have the continuous reader.

The whole series is attractive, and is likely to lead children to read. But why must these and similar books look so "schooly," and why cannot the edges of the covers be rounded off?

London University Guide and University Correspondence College Calendar, 1904. 164 pp. (Burlington House, Cambridge.) Gratis.—The private student anxious to graduate at the University of London will find that the University Correspondence College has shown how this may be accomplished with a minimum of trouble.

The "A.L." Sand-work Manual, Drawing, Modelling, Moulding. By Annie Wadsworth. 111 pp. (Arnold, Leeds.) 3s. 6d. net.—No doubt Miss Wadsworth can make work with a tray of sand both instructive and amusing to children; but we shudder to think of the mess some teachers and pupils must make of it. The first exercise is to draw a vertical line in the sand and learn the doggerel:

"I is for Ivy, Iron, Ida and Ice;
To learn all the letters will be very nice."

To most of the other exercises rhymes of the same degree of simplicity are appended. The book contains courses of work in sand drawing for babies, sand-modelling of common objects and sand moulding.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Need of Co-operation between Humanists and Realists.

IT would scarcely be desirable to continue this correspondence were it not that such views as Dr. Rouse puts forward are probably those of a large class. That he should be angry with me and others who protest against the inefficiency of conventional school methods is not surprising. I can scarcely expect him to admit that there may be justification for my "bitterness." But I must demur to his suggestion that it is necessary "to combine the forces of all interested in education to fight against our real enemies, the ignorant public." The public are in no sense the enemies of those "interested in education." Ignorant of certain things they may be—and therefore difficult to convince—but whose is the fault? Surely the public are the product of the *schools*—and in large part have been taught by classically trained teachers. At most we can accuse them of being over-trusting: they have supposed that the schools are competent to conduct the business with which they are charged; and they are still somewhat unwilling to admit that they have been deceived. It is for the schools to make use of the short interval of time during which they will have any opportunity of recovering the position they have so recklessly and thoughtlessly sacrificed.

Dr. Rouse never loses a chance of complaining of the encouragement of "science" by money grants. Yet he must know that the schools would never have admitted "science" had the way not been opened by bribes, and that even now its position is a very insecure one. At no distant date, it will doubtless be recognised that our position as a nation would have been hopeless had it not been for the great pioneer work accomplished by the Science and Art Department. He speaks of a danger that "all attention may be directed to the more sordid aim of getting money in one way or another"—as if science were taught only with mercenary objects in view. Nothing could be further from the truth. Men like Donelly, Huxley, Charles Kingsley, Playfair, Herbert Spencer, Tyndall, and many others, have never for one moment had such an idea in their minds when urging the introduction of scientific method into schools. If there be one subject more than any other which has been taught from mercenary motives it has been Latin—proficiency in classical knowledge having been the chief means of securing University scholarships and rewards generally. Discount the effect of scholarships, how many would have devoted themselves to classical studies from motives of pure philanthropy?

"Subjects which appeal to the imagination, taste and feeling," says Dr. Rouse, "may be almost extinguished in the near future"—which, being interpreted, means that if classical studies are not made obligatory, imagination, &c., will all go. There could be no greater travesty of the truth. My friend, Sir William Abney, who holds the glorious record of being the founder of the A and B schools, is one of the most imaginative men alive, full of taste and feeling. The men of imagination of the present are the scientific workers. The classical myths cannot be interpreted without the aid of anthropological science. The fact is, my adversary has no knowledge of the weapon which he presumes to use. The unimaginative people, the people who can see neither around them nor ahead, nor read the signs of the times, are those who have received a purely classical training, and who do not know what scientific method really is.

That Dr. Rouse misrepresents my views in every possible way anyone may see who does me the favour to refer to my published papers. He urges me to read Mr. Headlam's report. I read it when it appeared, and regard it as one of the most misleading documents ever put forward by a public department. Had it been offered for criticism within the Department, it could never have been published. Had Mr. Headlam taken note fairly of what had been done by one branch of the Department on behalf of science, and contrasted the success of its work with the failure of the other branch to give any proper attention to the development of literary studies in schools, the report would have had some value. His conclusion would probably then have been that the literary side of school work has fallen below par because literary men, as a rule, have had no scientific training.

As an answer to the suggestion that I am opposed to literary

studies, may I point out, in conclusion, that I gave the title which it bears to this correspondence.

Dr. Rouse speaks of himself as a "practical schoolmaster." I venture to suggest that the practical schoolmasters of the next few years will be those who, displaying some imagination, doff cap and gown, and all that these imply, take off their coats, roll up their shirt-sleeves and introduce "practical" subjects and methods of teaching into their schools. Justice will then be done to the magnificent material latent in the British boy. Ere long, the "ignorant public" will appreciate only such teachers.

HENRY E. ARMSTRONG.

The Science of Education.

IT is confidently affirmed that at present there is no science of education, but only a mass of facts and opinions which are unorganised as a whole even when sectionally coherent. Most writers are content to hint at the complexity of this material, and to hope vaguely for its eventual co-ordination. That is a task which genius alone perhaps can accomplish; nevertheless, there remains much for less gifted workers to do. Unfortunately zeal is somewhat quenched at the outset by the lack of an adequate grip of the nature of the problems to be solved.

In other sciences the body of knowledge acquired and its limits are readily defined. Now the theory of education is no longer a mere welter of chaos and conflict. There are assured facts, and it is not impossible to draw the boundary line between them and what is still hypothetical. Such a preliminary survey should be accomplished by every worker; if not, there will be much purposeless, or at the least uncoordinated, work. On the training colleges falls the duty of equipping the future research students of education. To some exceptionally able will come the privilege of raising on surer foundations the principles of education; to others the patient observation of facts vital to the possibility of their colleagues' labours; all will need a just appreciation of the direction in which thought and investigation will be most fruitful. A course of lectures with that end in view is an essential part of every college course. Think of some of the problems pleading for scientific treatment. It is agreed that the science of education must be broad - built upon the conclusions of physiology, psychology, ethics, and, some would add, sociology. But within what limits are these results germane to the questions of education, what discussions have they set at rest, what certain principles have they supplied, and of what specific perplexities do they offer even an approximate solution?

There has been much discussion of curricula, and many alternatives have been brought forward under the ægis of authority and experience. Have the basic sciences of which we have spoken been invoked to sift this material? Can they be fairly expected to undertake the task, and if so, what tests would they apply? Should a curriculum be absolute or contingent? Is the keenest thought to be devoted to a general curriculum which would include, for example, the curricula adapted for special districts and special types of schools? Do the proportions of mental food admit of the same fixity of ingredients as those of a healthy diet and with the same latitude of particular adaptation? The science of education we seek must be valid for all countries, and vary only according to law. It has been remarked that not a few fierce controversies have been settled by the subsumption of opposing terms under a higher concept. What questions must be put to our sciences to reach a concept in which the clamour of humanists and realists may be harmoniously merged? And so the interrogation might proceed. Enough has been said to enforce the point at issue. The students of a younger generation have a right to know how we stand with regard to these and kindred questions, and upon their professors falls the corresponding duty. The subject is strangely complex, but a start towards simplicity may be made by a precise delimitation of the ground already covered and that yet to be explored. I would therefore venture to urge those in authority to make such instruction a part of their regular course in the confident expectation that their efforts would not fail to provide a strong stimulus and a definite direction to educational enquiry amongst those upon whom their work will ultimately devolve.

Kent College, Canterbury. A. J. MONAHAN.

The Teaching of Modern Languages.

MR. RICHARD'S letter in your March issue impressed me as a delicious piece of satire upon what he calls the "old way," though I am not sure that the writer intended this impression to be produced by his remarks. No doubt there are many who, as he implies, do nothing more than "set grammar to be learnt and exercises to be written, hear the first from the book, and correct and return the second," though I quite fail to see upon what grounds this can be described as modern language *teaching*, old or new. Any average fourth-form boy, given the necessary control over a class, could perform such menial work.

The arguments quoted by Mr. Richards against the adoption of the more enlightened methods appear to me frivolous, and I cannot understand why he has advanced them, without pointing out the obvious fallacies they contain, or why he has failed to mention what *are* serious objections to the introduction of the "new method," unless, as I have suggested, his purpose was to adopt such an attitude as "a stalking-horse, and under the presentation of that to shoot his wit."

A fairly sound knowledge of the language should be, whether for the older or newer system of teaching, a necessity, and can be obtained by anyone who is willing to expend a little time and energy in fitting himself for his profession. One who is not willing to do so I should emphatically refuse to recognise as a man "worthy" to teach. The acquisition of an approximately correct pronunciation and accent and of an elementary knowledge of phonetics should not be an impossibility even to those who cannot reside abroad. There are many who have attained this qualification without leaving their own country, and those who have failed to do so are surely those who have not availed themselves of advantages within their reach.

Another objection often advanced is the extra strain that the new method puts upon the teacher. But, as Prof. Rippmann recently observed, *any* teaching conscientiously carried out produces a similar strain, and its absence argues faulty methods or want of thoroughness. The critics whom Mr. Richards quotes have, I think, altogether missed the real objections to the adoption of the "new method," some of which I should like to enumerate.

(1) The present arrangement of curricula gives so little time to modern languages that a rational and scientific use of older methods may possibly be preferable to trifling with the newer.

(2) The necessity for achieving examination "results" and the cramping influence of most examination syllabuses frighten those schoolmasters who are chary of sacrificing the outward signs of scholastic success to the less apparent but more enduring results that the adoption of the "new method" might produce.

(3) The miserable inadequacy of salaries deter the most promising men from adopting modern language teaching as a profession.

(4) The unscientific and mechanical drill in grammar and exercises practised by many so-called modern language teachers hinders public appreciation of the work done under the name

of modern language teaching, good and bad alike, tends to keep salaries low, and does not lessen the disdain which "the man in the street" entertains for a truly noble profession.

(5) The excessive number of hours of actual teaching renders it impossible for the teacher thoroughly to prepare his lessons or to correct the work of his class.

A. J. WOOLGAR.

Horsham Grammar School.

Commercial Arithmetic.

PERHAPS some of your readers will be pleased to see the annexed two sums which have just been set at the recent Society of Arts Examination in Commercial Arithmetic. They form one-fifth of the whole paper, and perhaps they have some subtle connection with the subject:

(1) Find by casting out the nines and the elevens whether the correct answer is given to the following multiplication, and if there be an error find, without actually multiplying, the nature of the error.

$$67852 \times 30517 = 2070369484.$$

(2) Three motors A, B, and C run between London and Portsmouth, starting at the same time, A and B from London, and C from Portsmouth. Their average speeds are—A, 16 miles an hour; B 20, and C 24. B and C pass each other at a certain point, and it takes A 33 minutes longer to arrive at the same point. Find the distance from London to Portsmouth.

JOHN T. PEARCE.

Leith.

MUTUAL AID.

THE object of this column is to afford teachers the opportunity of asking questions of and giving assistance to colleagues. The questions received to which replies are solicited will be printed first; following these will be the answers which have been sent in, and, to make such replies intelligible to all readers, they will be accompanied by the question. Readers are invited to send answers to any of the questions asked below by our correspondents.

The questions should deal only with educational matters, using the expression in a broad sense, and the publication or otherwise of any question must be left entirely to the discretion of the Editors.

Questions and answers should be addressed to the Editors of THE SCHOOL WORLD, St. Martin's Street, London, W.C., and should be accompanied by the full name and address of the sender, though not necessarily for publication. Each question or answer should be on one side only of a separate sheet of paper.

QUESTIONS.

T. S. (i.) In a series of handbooks entitled, if I remember aright, "Handbooks of Social Questions," is one on Education, and dealing with legal points affecting master and pupil, income-tax, assessment on school buildings, &c. By whom is it published, and at what price?

(ii.) Are the Irish Statutes of Charles I. procurable as Government publications? If not, how may they be obtained?

K. C. (i.) Is there any good book of *examples* on Geometrical Drawing? Most of the books I have seen have few examples, and though, of course, one can invent them for oneself, it is more simple to have them already made up.

(ii.) Has any cheap book been published of illustrations of logic—syllogisms and fallacious arguments principally?

G. HAMMAM, Beirut, Syria. Wanted:—(i.) information of those who have attempted to solve of inscribing a heptagon in a circle.

(ii.) Any general rule for the divisibility of a prime number. Where can I find the rule with

I. W. Will some teacher give an Australi scope of the French and German required of exten for the B.Sc. (pass) examination of the University

B. C. How can the following equations be s give the values of x, y, and z, which are clearly i 1, 2 and 3.

$$5x - 6y + 3z = 26$$
$$4x + 5y + 2z = 20$$
$$3x + 4y + z = 14$$

QUESTIONS WITH ANSWERS.

M. R. B. *Can anyone name and give price an "Admission Registers for Private Schools" that space for recording details of admission, leaving, future work of pupils?*

A. W. FULLER. There is such a register, price lished by Messrs. James Galt & Co., 36-38, John Manchester.

G. HAMMAM, Beirut, Syria. *Wanted*:—(i.) *two or three books on the history of Education.*

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(iii.) *Is there a key to the exercises in Mackay's*

G. W. SMITH. (i.) "A History of Education Davidson (Constable), 5s. net. "Source Book o of Education," by Dr. Paul Monroe (Macmill "A History of Education," by Prof. F. V. N. P ton), 1½ dollars.

(ii.) You should see "Masonry and Ston E. Dobson (Crosby Lockwood), 2s. 6d.

(iii.) "Key to Mackay's Euclid" (Chambers), 3

B. C. *Where can I find information concern form of beam compass?*

H. F. MORGAN. Consult the catalogue of any matical instrument maker, such as Aston and B 61, Old Compton Street, London, W., or Stanley stile, Holborn, W.C.

A. L. *Is there a reasonably cheap edition Letters, or selections from them?*

R. S. GORDON. The only edition I know is Letters, 1422-1509, Edited by James Gairdner," stable), 21s. net.

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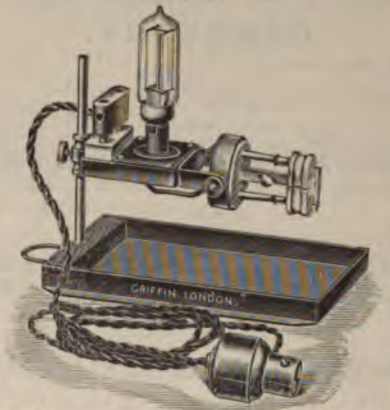

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To face first matter.

The School World

A Monthly Magazine of Educational Work and Progress.

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NATURE-STUDY.

By H. MARSHALL WARD, D.Sc., F.R.S.
fessor of Botany in the University of Cambridge.

'hey talk of nature-study who never nature knew." *

OBABLY most people are agreed that nature-study in some way implies the study of nature, and the principal fork of diver- of opinions will be evident in the controversy what aspects of nature are to be studied, ow the study is to be begun and followed up. ıature-study" is merely another way of ssing "the study of nature," then there ; to be but one escape from the contention it is synonymous with science, and it is by eans clear how we gain by substituting the word for the old phrase: the one escape I referred to is that something peculiar may be ed in the word "study."

me people would seem to think that to study e is to meditate on some natural feature or :t—a sunset, the sea, a tree or an elephant, for nce, and to evolve from one's inner conscious- a train of thought or speculation, which may to the expression of some highly fanciful and ıct ideas, which, however entertaining they appear in the songs of a troubadour or the s of a poet, are certainly not scientific, and do promote a knowledge of nature, and this is however beautiful the words used in express- he ideas may be; and I am not here contend- that beautiful expressions of fanciful imagery : no value in the many-sided culture for which emotions and the intellect of mankind call. ı only emphasising the conviction that, if the ; of education are to be faithfully pursued, we ıot gain, but we decidedly lose, in any line of ɔn that implies the inculcation of emotional sentimental ways of viewing nature under the eading name of nature-study: nature-study of order ought to be frankly termed fiction or r-tale.

et us grant, then, that nature-study does not n staring at nature, and evolving fanciful ideas ıt the beauty, the terror, or the mystery our ignorance or selfishness reads into her objects or her doings—you see the very pitfall I was fore-seeing has entrapped me, and nature has been inadvertently referred to in the word "her," in the very terms that contemplation in the past has impelled anthropomorphic man to adopt. We will let the slip stand as a warning.

Leaving such contemplations and speculations to the artist and the poet, and that with anything but disrespect, we have to face the proposition that nature-study means the investigation of natural objects, natural features, and natural actions; it means the investigation of the peculi-arities of the rocks, stones, rivers, seas, clouds, rain, animals and plants, &c., which go to make up the world we live in, and unless such investigation is scientific, and has for its aim something more than the making of an index or a formal catalogue, it is difficult to see where its particular value in education comes in.

It has often struck me that the promoters of nature-study, in their perfectly warranted and sincere desire to introduce it into the curriculum of the child's education, have allowed themselves to be frightened by such words as "investigation" and "science," and my sympathies are entirely with them in so far as their fright is based on horror at having children bored with the barren kind of thing which has sometimes been put before them as elementary science. But altering names does not alter the facts they connote, and you cannot by changing names escape from such facts as that nature and natural processes exist, and that all children who observe the things around them are investigators. How many intelligent children find out for themselves such facts as that it re-quires more effort, and even a definite preparation for that effort, to push over a table than to over-turn a chair? How many have discovered—the word is quite justifiable—that if flowers are gathered they soon wilt; or that a chrysalis gives rise to a butterfly; that bees enter foxgloves; and that a rain-shower is preceded by gathering clouds?

Now it is perfectly true that many of the notions associated by children with these, and a thousand other phenomena they discover for themselves, or are told by other children with staring eyes and gesticulations of delight and wonder, or even awe, are woefully unscientific, though I believe most of the inaccurate ideas they imbibe are got from their

* With apologies to Mr. Rudyard Kipling.

elders during the savage state of babyhood, when the questions pour out as fast as the five to ten-year-old lips can frame them, and are of kinds too subtle for any but the abler types of parents to deal with satisfactorily.

Why should not nature-study mean the continuation of this entrancing state of childish enquiry and observation; the difficulties merely consisting in a gradually closer attention to the objects themselves, gradually more accurate questioning on the child's part, and, not too early, however, a gradual acquisition of the power of describing what is seen? This should lead to further curiosity, step by step, and only they who do not know the way an intelligent child's mind works with regard to things the child is really interested in, need despair of the naturally stimulated curiosity promoting further questions, which the really capable teacher will find ways of answering with further reference to nature. Real continuous thinking, and especially experimental investigation, follow much later.

Aye! But here comes the rub! The really capable teacher. What with bad training to begin with, trammelled duties imposed by the authorities, harassments of all kinds, and no time to do the work required, how can we look for the really capable teacher of my ideal? While freely according all honour to the splendid types of usually under-paid but devoted duty-doers, men and women both, who carry on the work of education of young children in this country, and while frankly imputing the chief blame to those I believe to be responsible—those who think education is to be measured by the amount of retailable information that can be crammed into a child's mind, and who utterly fail to see that a boy who, having been taught how to observe accurately and think for himself, will do so in after years and rapidly learn where to look for what he does not know, is a far more valuable asset as a citizen than a hundred brilliant boys who can pass examinations which involve the useless repetition of what other brilliant boys and men of the same stamp have written about things; while fully alive to all this and more, I am convinced that most of our teachers fail, and will go on failing in the teaching of nature-study owing to two principal reasons.

The first is that the majority of teachers know nothing or next to nothing of nature, and there is no more hopeless aim to be set before man or woman than to be expected to transmit a knowledge of natural objects and doings to children unless the teacher is, so to speak, saturated with enthusiasm and first-hand knowledge of the beings and objects, animate and inanimate, concerned, and their relations one to another. I am not referring to the quantity of information a teacher may acquire: I am speaking of the quality of the knowledge which is, or should be, part and parcel of the mind of the man or woman who undertakes the serious reponsibility of teaching children of any age such a subject as nature-study. People seem calmly to assume that anyone can teach nature-study, though they would demand very severe qualifications from a teacher of French o Greek.

The second of the two reasons for failure above referred to is that many children are put into the classes who are utterly unfitted for such a study. Whether from defects of early training, or want of training, or from mental incapacity of a particular or any kind, or whether for other reasons, I cannot stop to enquire; but that mixed classes of children of all degrees of intelligence and stupidity, herded together simply because they happen to have reached the same standard of attainment as measured by our prevailing systems of schedules and examinations, forsooth, or because they are of about the same age—why not of the same height or weight, or with the same coloured eyes or hair?—militate fatally against the successful training a course of nature-study, properly conceived and carried out, should be able to afford them, scarcely requires mention.

Perhaps it is now time to consider what should be done in a course of nature-study, supposing the obstacles referred to were non-existent or could be overcome.

Well, suppose the teacher gives each of the children in a class a couple of stones, one a well rounded pebble and the other rough and jagged. How would he or she proceed not merely to interest the mischievous young monkeys in these two objects as serious subjects for enquiry, but also to evoke questions from the more enthusiastic of them, and lead them, with help, of course, to answer such questions more or less completely by reference to nature, and not to books? I would presume to test the capacity of the teacher as well as that of the class by the way this was done.

Suppose one of the children, struck by a brilliant idea, said both stones were hard, would the teacher deceived by the obviousness of the remark, pass it by, however gently and sympathetically, or not? It should be recognised that the observation is genuine, however simple it may be. But the teacher is expected to make use of it; by itself it falls flat, and the difficulties are only beginning. Clearly one wrong use of it would be to enter upon a long disquisition as to the relative hardness of bodies, but it might be advisable to ask the child how she knows it is hard, or why she did not call it soft, leading to the idea that hardness is an excellent but relative attribute to attach to the stone, but that the same notion strikes some people in regard to a piece of wood. Of course the teacher will have to get the piece of wood and have the matter put right; that is the curious feature about nature-study, you may have to bring these little minds in contact with a good many things before you and they have finished with this stone, and many unpromising details may occur as the children harp on obvious attributes of smoothness, colour, markings, and so forth, which genius alone will cope with.

But the enquiry suddenly promises to go deeper as one of the boys strikes one of the stones against another, an example rapidly followed by others. Do not let them escape! Of course I cannot fore-

tell what will happen next, but it will be surprising if somebody does not notice that the stones chip and small powdery fragments fly off; possibly sparks may be seen, and if so that will be heard of to a certainty. If one of the pupils observes that the stones are themselves composed of smaller and different particles, crystals, &c., you have excellent material to work on.

The sparks I shall leave to the teacher, merely remarking, beware of a lecture on friction, percussion, oxygen, and so forth, because it is just these long digressions of boring information that stamp the mere teacher as contrasted with the genuine educator. We will suppose the general attention has rather been directed to the abrasion of particles. Now, dear teacher, do you see where your pupils are unconsciously leading you and each other? If your school is by the sea, or near a river or brooks with rounded pebbles in it, your course is comparatively easy; but I do not envy you your task if you selected that rounded pebble from an inland garden or field, and without ulterior motive regarding the kind of education a water-worn pebble is excellently adapted to bring out, because the lesson you and the class are really going to get out of that stone is the great generalisation that such stones, hard as they are, have been rounded by attrition through the ages or formed by the agglomeration of other particles, or crystallized out of molten materials, &c.; and every one of you will get that lesson out of the stone by different steps, of questions and further observations culminating in a visit to the shore or the brook, &c., or even leading to a clear understanding of the way sand and mud are formed as well, to say nothing of stimulating thoughts on the meaning of geological time. The nearest bit of sloping, gravelly road will help on a rainy day; or even an artificial sluice in the playground.

But, it may be remarked by a teacher in an inland town, these things are not accessible. Very well, do not choose the rounded pebble; the subject is not fitted for your purposes in the circumstances in which you have to work. And this necessity of having the choice of topic to the teacher may be at once the charm and the use of nature-study.

This points the important moral that a subject for nature-study must not be chosen independently of the surroundings, or merely in deference to a schedule or code drawn up by people unacquainted with the neighbourhood. Otherwise many teachers will be driven to books or to didactic lectures, object lessons, and so forth, which may appear an easy way of imparting their views, or that of some other pedant, to the children, but which will certainly bore them and leave no impression on their minds, let alone its utter failure to draw out—*i.e.*, educate—their observing and thinking faculties.

Let us take a green leaf as another example, more advanced in character. The children, with leaf in hand, will probably flounder a good deal at first, but a real educator who knows his subject will soon stimulate the observations that it wilts because water is lost; that the venation—never mind the word—supplies a supporting framework, as the ribs of an umbrella do to the silk; that accompanying these supporting ribs are pipes which convey watery liquids to and from the softer parts; that the wilting can be prevented if the pipes are kept supplied with water; that starch turns blue with iodine; that starch is food; that the leaf in certain circumstances also turns blue in iodine, and contains starch; that this is only the case if the leaf be illuminated; that the supporting leaf stalk and framework expand the leaf in the sunshine; and so on, proceeding—I see no reason why not—to a gradually clearer and clearer conception of the structure of such a leaf, its relations to the gases of the atmosphere, the water of the soil, the solar light and so forth.

It will take time undoubtedly, but if at the end of a year of careful and gradual enquiry, leading from fact to fact and from conclusion to conclusion, the class has a first-hand knowledge of the marvellous work done by a green leaf, a basis is laid for the further education of each child such as no amount of booky information can give. Not because the child knows so much or so little about a green leaf, but because that child has learnt the beginning of *how* to acquire further knowledge. A series of such nature-studies as might be devised with the aid of seeds sown in boxes of soil, of caterpillars kept in muslin cages, of ants in properly constructed boxes, of buds and twigs of trees in the winter or when opening in the spring, of flowers in the school garden as they pass from bud to fruit, of chalk from the cliff or slate from the quarry, and mud or clay from the bottom of a pond, or with a few of the thousand objects possible (always supplementing the work selected by visits to nature in the open) might leaven the rest of the school work, the drudgery and discipline of which cannot be dispensed with.

The anticipated exercises in the further study of natural processes in the open by brook or sea, in field or forest, on moor or hill, combined with all kinds of awakened interests in cloud and sky, wind and calm, sun and shade, &c., of the changes in season, the relations between animals and plants, or one plant and another, would act at the same time as stimulus to both pupils and teacher, and as a goal towards which the lessons should strive to attain. Just imagine the possibilities offered by a careful study of how soil is made, how it changes, how earthworms, dead leaves, pieces of wood, stone, &c., affect its properties, and so on!

The beauties of nature! Of course, but they should be the beauties of adaptation of structure to purpose, and not the imagined ravings often as impudently read into nature as they are seductively expressed in beautiful and delusive words. Moreover, nature is not always aesthetically beautiful, and a child's character may be weakened by assuming that it is. The peace of nature! Chiefly sentimental nonsense, for the grandest of nature's doings are war, implacable and relentless war, and the child will benefit, and not suffer, if gradually led to recognise that undisciplined war

with nature and natural laws must inevitably result in disaster to himself.

No, let us be honest, and if we teach children to study nature, let the study be real. Other departments of school work may with equal honesty be devoted to the study of art, but do not jumble up poetry, music and painting with science. The true aim of nature-study should be to lay the foundations of a training in the methods of accuracy in observation, in recording, in comparing and contrasting the real things of life and death, and the reality of the phenomena which surround the man and shape or obstruct his relations with his fellows and with other animate and inanimate beings. Thinking, in the sense of drawing accurate conclusions and building and testing ideas on them, is a more ultimate aim, not at first attainable by young children; but let us beware of so choking or impeding their first efforts by presumptuous statements of our own, or from books written in most cases at second hand. Let the child at least have the chance of feeling that with the aid of a real educator he can get some knowledge at first hand, and of finding later on that it is a pleasure as well as a gain to go further.

Nor do I advocate this merely on the ground of personal profit to the child as he grows up; the State is best served by its most intelligent citizens, and the school—the State in embryo—will find all its other classes brightened by the keener sense of effort, industry and honesty of purpose, with which these weekly workers in the new regions of knowledge are imbued.

A NEW METHOD OF TEACHING ENGLISH COMPOSITION.

By Richard E. Crook, B.A.
Wesley College, Dublin.

SOME years ago the present writer undertook to teach a class of young boys in English composition. As might have been expected in the circumstances, the strictly conventional method was adopted. A "subject" was set for "original composition," the usual round of schoolboy amusements and holiday rambles was beaten once again, and this was varied with specimens of the exercise called "paraphrase"—the very imperfect rendering of narrative poetry into ghastly prose.

Needless to say, the teaching was largely a failure. Every teacher of the subject must remark how little the successes and failures of his class are due to definite teaching. Clever pupils learn the trick, we know not how: stupid ones simply mark time and remain much as they were. This is largely the fruit of causes over which a teacher has little control. The taste for miscellaneous reading counts for more in this subject than any other factor, and is practically outside the sphere of direct teaching. But this failure of the teacher's function in an important branch of school work significant, and seems to present "an invitation thinkers." Only an unimaginative teacher can quite satisfied with the barren alternatives of pa phrase and original composition. From the didact point of view, paraphrase, as commonly taugh has almost every fault that a lesson can have The first condition of any exercise in English com position is that it should be *enjoyed* by the pupi who has marked aptitudes for writing, and thi condition is emphatically not fulfilled by ou current "paraphrase." If a boy enjoys alterin "My hair is gray, though not with years," int "The whiteness of my hair is not due to age," w may feel certain about his future literary perce tions. Of course, a clever boy never does s And the other faults of the practice are mor serious still. It is hard to make clear to th schoolboy what we want done. The question that spring up at every step—whether we shoul keep in or leave out the special colouring, em tional emphasis, and varieties of ornament whic are bound up with the poetic form and are out place in prose—are too difficult to explain to th schoolboy, and paraphrase which ignores suc difficulties either teaches nothing or *mis*-teache The schoolboy's perceptions are trained in a fals direction.

From the working teacher's point of view, ther is a graver defect still. The teacher does not ge into touch with the characteristic faults of th schoolboy's work at all. The composition i "looked over"; false concords are found and cor rected; bad grammar is set right, and so forth But of systematic guiding of the pupil's intelli gence from schoolboy English to the English o Huxley and Thackeray there is none.

Let us begin with a diagnosis of the complaint. Every reader of these pages has probably at some period read one hundred schoolboy compositions. The first thing that strikes the observer is their extraordinary uniformity. Underneath their apologies for punctuation, concord, and correct grammar, we find an invisible archetype to which they almost invariably conform. The secret of this invisible model is not far to seek. Anyone who listens to the schoolboy's excited account of a cricket match will find that he does precisely what eminent literary men (according to Sir Leslie Stephen) are wont to do—he writes just as he talks.

Let us write down, stripped of schoolroom "leadings," an absolutely naked specimen of the schoolboy's talk:

> The way we had to fly out of Micky's was I and Billy Harrison went in to have a look at a magpie's nest up a tree with no branches on the lower part and I climbed up and I was just holding on to the nest when the branch under me broke like that and I had just to hang on by the nest and get an egg in my mouth the thorns were fearful sticking in my hands when Billy screams out here's Micky with the dogs I did come down quickly on the slide like lightning and had my hands sore for about a week after and my knees on the inside.

I believe that a piece of "raw" English like

his is the schoolmaster's logical starting-point. he conventional grammar-and-composition book rofesses to teach the combination of words into ntences, sentences into paragraphs, and so on in ascending order to the whole composition. In actice I believe this to be a mistake. The order ght to be reversed. The sentence is not *the it which the schoolboy understands*, and every teacher s met the pupil who knows (in theory) what a ntence is, and cannot be taught where one sen- ce stops and another begins. What such a boy nts is to have the sentence explained to him as necessary mode of division and pausing in a tement such as the above passage. If any der thinks that this reversal of the usual order in conflict with sound educational principles, I ould like to point out that almost all false and solete methods of teaching are false and obsolete lely because they do not begin with the child's int of view. The method I have outlined cer- inly gets nearer the child's mind and its starting int than the recognised methods.

But at present the theoretical is not so impor- t as the practical superiority. This method nishes a means of *detailed* class-teaching which ginal composition does not. Set six boys a bject for an essay. A's essay will be so different *matter* from B's as to preclude all comparison of m. But set six boys the translation of a passage m Cicero. The comparative merits stand out mistakably.

But does this method extend to paraphrase in e usual sense of the word? That is, the school- ster usually employs an author—Scott, or acaulay, or Stevenson—as material for para- rase. I believe that the teacher ought to raphrase into schoolboy English, and that the pil's business ought to be the reversing of this. the risk of ridicule, I subjoin a specimen pas- ge, which readers of "Treasure Island" will sily discover for themselves:

The hill was awfully steep and stony just about here and a of gravel got loose and ran down, it rattled and jumped all ough the trees so that I turned to look that way and there s something or other jumping behind the trunk of a pine tree whether it was a monkey or a man or a bear I did not ow except that it seemed to be dark and hairy and I was too ghtened to go any further and I could not go back either ause the murderers were behind me and here was whatever s was in front of me. I was more afraid of it than of John ver even and I turned round and was just beginning to go ck to the boats when the thing appeared again and made a eat round to head me off from getting back to the boats. It s no use my trying to run because I was dead tired and no tter how fresh I had been I could not have got away from it, was so fast. It hopped along like a deer only on two legs te a man but stooped double like no man that ever was but it s a man all the same.

An ingenious teacher might easily make in- erted paraphrases of this kind, skilfully adapted the weakness and needs of his particular class. When each member of the class has written his nproved version of this, and the teacher has hanged it step by step into conventional English n the blackboard, the original passage in "Treasure Island" might be copied out and learned off.

I need not waste space in pointing out the lessons which would spring up naturally from a method like this in the hands of an intelligent teacher—easy *viva voce* competitions in variety of word and phrase, casual correction of ordinary blunders, and so forth. At present a teacher's corrections are not worked into the schoolboy's mind; they remain apart, isolated comments which are forgotten within the hour. I believe the method I have outlined to be theoretically sound, in the sense that it begins with the problem from the young schoolboy's view-point. I like- wise believe it to be practically sound, in the sense that it may be easily and conveniently employed by the practical teacher to meet existing diffi- culties, and is adaptable to most of the problems he has to solve.

THE TRAINING OF SECONDARY-SCHOOL TEACHERS AT THE UNIVERSITIES.

V.—THE DEPARTMENT OF EDUCATION, UNIVERSITY OF MANCHESTER.

THE policy of the University in Manchester has followed the lead of Cambridge rather than of Oxford in the training of teachers, *i.e.*, it has sought to unite the courses for primary and secondary-school teachers under common direction rather than to separate them; and further, since the University is open to both sexes, and the labours of men and women are so closely associated in every branch of teaching, the train- ing of men and women is combined in one depart- ment. The courses concerned with "day train- ing" are, in view of Government requirements, necessarily planned separately from the courses prescribed for secondary students, but wherever common ground is found the two are worked to- gether. Thus, the future secondary-school teacher gains some useful acquaintance with the conditions under which the primary school does its work, while the student preparing to teach in primary schools is also benefited by seeing something of the secondary school. Both realise far better than if they were trained in isolation the limitations of sphere, the distinctive characteristics, and the common ideals which concern the various types of school for which the teacher has to be prepared.

This feature suggests what is perhaps the cha- racteristic quality of the course of training in Manchester. A university is pre-eminently a place for study and research. The introduction of "train- ing" in the Universities can only be justified in the belief that the Universities foster a thorough spirit of scientific inquiry, and will give students the best that can be had in the study of education on every side of the subject. A course of secon-

dary training needs above all to be presented in this aspect because it is only offered to graduates who have already, as a rule, resided in a university for some years, and when they find it necessary to prolong their studies they are old enough to select a course of training for themselves. If they look forward with any enthusiasm to the profession they have chosen, they are likely to prefer a university where the studies they adopt are made much of, and are handled with a thoroughness likely to appeal to students of maturer years. The new Universities cannot hope to rival Oxford and Cambridge in the attractions of tradition or social *prestige*: they are therefore all the more stimulated to efficiency in their proper sphere of university activity—in the standard of university teaching.

This was, in a great measure, the point of view adopted by the Senate and Council of the Owens College when they founded the first Chair of Education in England in 1898, and in appointing the late Prof. Withers to the post they chose a man who was not indeed advanced in years, but stood in high repute among teachers and scholars. His untimely death in 1902 hindered, for the time, the development of the department, but the University was wise enough to see that education was claiming more and more attention from the nation at large, as well as within the profession, and it determined to enlarge the scope of the department once more.

In making this effort they relied upon the aid of men and women in and around Manchester, who came forward with substantial donations to endow the Chairs. Already in 1900 the first Chair of Education had been partly endowed by Mrs. Fielden, of Todmorden (whose name is given as a title to the Chair), and last year not only did Mrs. Fielden add to her gift, but a number of others joined to establish a special fund for the Department of Education.

As a result the University was enabled to invite Prof. M. E. Sadler, an appointment which not only has brought distinction to the Manchester University, but has emphasised the policy to which we have referred above, for Dr. Sadler is the only scholar in England who has done conspicuous work in the serious study of the history and administration of education. For many years students in training have been expected to study the lives of great teachers as a subject in diploma examinations, but, apart from the stimulus afforded by the example of these educational heroes, little intellectual profit has been forthcoming. But Prof. Sadler's labours during the last eight years have placed these studies on a new foundation. Every English teacher who reads at all, or who attends conferences, knows something of the breadth of treatment and philosophic insight which characterises Dr. Sadler's study of education in modern Europe. Unfortunately the pressure of other claims prevents Prof. Sadler from residing in Manchester more than three months in the year, but between Christmas and Easter of this year his students have laid a foundation of genuine interest in a new field of study, and some of them look forward to continuance of this work when he rejoins th University next January.

Since Prof. Sadler could only come to th University for one term, the University looke elsewhere for a successor to H. L. Withers a head of the department, and offered the Sara Fielden Chair to Dr. Findlay, headmaster of th Intermediate School in Cardiff. Prof. Findla had at an earlier period been engaged in trainin secondary-school teachers at the College of Pr ceptors, but had also been an active schoolmaste for many years, and his main efforts as regard th study of education had been directed to develo a sound practical system of training, enabling th student to reach a serviceable theory throug experience among pupils in school.

At the same time that these appointments wer made the University invited two distinguishe teachers in the neighbourhood, Miss Burstall, the Manchester High School for Girls, and M J. L. Paton, who had just been appointed to th high mastership of Manchester Grammar Schoo to join the Department of Education as speci lecturers. The staff is completed by two othe lecturers who have served the University fo several years: Miss Catherine Dodd, and Mr. H Thiselton Mark. Their work is chiefly concerne with the primary students of the day-trainin colleges, but they also are taking a share with th professor in looking after the diploma students The University is also considering the question o appointing a medical man as lecturer on the obser vation of children and allied topics.

It was natural to expect that the introductio of new professors and lecturers would lead t modifications in the course of training, especially as both the professors had for many years done distinctive work on their own lines in the treatment of pedagogic studies. And by good fortune their appointment was contemporaneous with the reconstitution of the University, whereby Liverpool and Leeds are provided with charters of their own. Thus the Department of Education, within the limit imposed by University regulations, has been able to exercise full freedom in recasting the course of training both in theory and practice. A summary of the prospectus as now approved by the Senate will best explain the ground which diploma students will be expected to cover during the coming session. It should be premised that while the courses are arranged in the first instance to meet the requirements of diploma regulations so as to qualify students hereafter to register (either under column A or column B), the scope of the Department, in accordance with the policy indicated above, takes a wider range, and students and teachers are invited to share in any of the courses whether intending to qualify for registration or no Manchester is the intellectual centre of an are full of political, social and educational activity and both teachers and laymen are found ready t come to the University and extend their acquaintance with some aspect of education. Eve professor and lecturer in the department ha

planned some of his courses with a view to the needs of this wider audience, and it is anticipated that, as is often the case in German and American universities, students and teachers of experience, both from Great Britain and abroad, will in course of time come for short periods of study, apart from any ambition to secure a diploma. In this connection it should be noted that Prof. Sadler's period of residence in Manchester is from January to Easter: he proposes in the ensuing year to offer "seminar" work especially adapted to those who are interested in the investigation of problems of administration and organisation. The lecture and discussion courses which he has given this spring on these subjects have been attended by a large class, partly composed of teachers, heads and assistants, in the Manchester district, partly of men and women who take an interest in public education.

COURSES FOR THE TEACHER'S DIPLOMA.

I.—IV. LECTURE AND TUTORIAL COURSES.

I. Systematic Review of the Principles of Education. (Michaelmas and Easter Terms.) Prof. Findlay.

II. Portions of the history of Education, with prescribed books. (Lent Term.) Prof. Sadler.

III. The Observation of Children, and School Hygiene. Demonstrations, Practical Work, and Lectures. Twice a week during the Michaelmas term. (Medical Lecturer, not yet appointed.)

IV. Psychology and Logic in relation to Method and to the Preparation of Lessons. Two lectures a week for two terms, or its equivalent throughout the Session. Prof. Findlay and Mr. Mark.

V.—VI. PRACTICAL WORK.

V. A Course of Demonstration and Criticism Lessons, extending throughout the Session. Attendance: one hour united attendance at the weekly criticism lesson; one hour on the day following for report and discussion; about three hours per week teaching or observing in the classes under instruction. Prof. Findlay (assisted by specially qualified teachers on the staff of the school where the instruction is given).

[The Governors of the Manchester High School for Girls have kindly offered certain facilities for this work.]

VI. Practice in Class and School Management in approved schools (to be taken when possible before the commencement of the Session).

Further particulars as to the purpose of these Courses will be given in a special prospectus. Students who have already had experience in good schools may be excused Course VI. and a portion of Course V., but in no case must the prescribed time be less than the minimum specified in the University Regulations. Part of the experience and practice required for Course VI. may be obtained by a few students each term (women students only) in the Primary School directed by Miss Dodd in Brunswick Street, or in the Manchester High School for Girls. During the present Session other students have been also afforded facilities in the following schools:—

The Manchester Grammar School, the Whalley Range High School, Withington Girls' School, Blackburn Grammar School, Wigan Church High School for Girls, Ducie Avenue Higher Grade School, Ladybarn House School, and various Public Elementary Schools in Manchester.

VII.—SHORTER COURSES AND ADDITIONAL COURSES.

(a) The Curriculum and Methods of Primary School Teaching. Ten Lectures in the Lent term by Miss Dodd.

(b) Theory of Education in Plato's "Republic." Six lectures in the Easter term by Prof. Alexander.

(c) Some Ethical Problems of School Life. Mr. Paton.

(d) The Oversight of Girls and other Problems of Management in Secondary Schools for Girls. Ten lectures in the Michaelmas term by Miss Burstall.

(e) Principles and Practice of School Management (including Visits to Schools). Prof. Findlay.

All candidates will be required to attend (a), (b), (c) and either (d) or (e).

Some of the above will be arranged as External Courses on Saturday mornings, or at other hours when acting teachers can also attend. Other External Courses, especially two courses in the Lent term, by Prof. Sadler (to be announced later), will be available for Diploma Students.

Candidates will also have the option of attending courses in Psychology and in Ethics (Department of Philosophy, II. A and B). Courses are also provided in Elocution and in Blackboard Drawing.

Fee £15 15s. This is an inclusive fee for all the courses mentioned above, and covers entrance fee and library fee.

For students of Education desiring to study in the Department for one term only, £6 6s.

Some further explanation should be afforded as to the nature of the practical training, for teachers are, as a rule, sceptical as to the possibilities of a university giving real help to students in this direction. Undoubtedly it cannot be done by a university unless the co-operation of teachers is secured. At Manchester the University is fortunate in having within bow shot of the Owens College a large high school of repute conducted by a headmistress who has herself been trained and is in full sympathy with the cause. Prof. Findlay has therefore been able to associate himself with Miss Burstall and the more experienced teachers on her staff, so that the students can share in systematic courses, sometimes teaching, sometimes observing the lessons given by the class teacher. The special plan devised only commenced at Christmas, and it is too soon to report upon it in detail, but it gives the student the advantage of close oversight and guidance from regular teachers, conducted as a part of the continuous system of the school without severing this work from the courses of lectures and study of principles afforded in the University Seminar.

It has become evident, however, that this one school cannot cope with all the demand that will be made for practical guidance to students, and already Dr. Findlay is engaged on a plan of which he has been a strenuous advocate for many years, viz., to establish a small demonstration school to be placed at the disposal of the Department of Education. A school with similar aims was most courageously set on foot by Miss Dodd, for the use of her primary students, a while ago, and now funds are being collected to provide a small school somewhat of a "higher elementary" character. A sum of £1,300 is already promised in addition to a school house, and it is intended from the first to staff the school with teachers who are thoroughly equipped to be of service both to the pupils and to students.

For the purpose, however, of acquiring wider

experience under the ordinary conditions of school work, the department follows the plans already outlined in the accounts of training (SCHOOL WORLD, February and March last), conducted in Oxford and London. A course of professional training to be successful must be conducted in close alliance with teachers of experience in the neighbourhood, and, although the direction of a university department must always be reserved in the hands of Senate and Council, it is well understood that all departments which approach the character of professional schools, whether in engineering, commerce, or medicine—or education—needs the co-operation of members of the professions whose sphere lies outside the walls of the University.

Finally, one or two features of the Diploma examination may be noted. (1) Although the diploma, as at Cambridge, may be taken by other than secondary-school teachers, it gives proper emphasis to the needs of such teachers, and all candidates are required to have gained a substantial part of their experience in secondary schools. Indeed, it is hoped that among the students taking a course a few at least will be assistant-masters or assistant-mistresses who have already laid a foundation of experience and seek an opportunity for the study of their profession. (2) The following regulation is intended to meet the case of scholars with a special bent towards some branch of teaching or of teachers whose interest is attracted by a special type of school. "Candidates who desire to offer evidence of special acquaintance with methods of teaching particular branches of a school curriculum, or with methods of teaching in any particular type of school, will be afforded opportunity of displaying this acquaintance in the examination." An indication of special qualifications for teaching one or more such branches may be given in the Diploma.

THE PUBLIC SCHOOL SCIENCE MASTERS' ASSOCIATION.

THOUGH one of the youngest of the various associations of schoolmasters, this flourishing society has already made its influence felt in many directions, and been called into council both at the older Universities and by other educational authorities.

The first conference of public school science masters was held in January, 1901, at the University of London, under the genial presidency of Sir Henry Roscoe, who was at that time Vice-Chancellor of the University; but the real birthplace of the association was Eton, for it was from Eton that the first circular proposing a Conference of science masters was issued in the summer of 1900. This circular bore the names of Mr. T. C. Porter, well known for his physical researches; Mr. W. D. Eggar, one of the most active of the reformers of the methods of teaching mathematics in schools; Mr. M. D. Hill, the first chairman of the association; and Mr. H. de Havilland, who has recently succeeded Mr. Hill on its Committee.

The first Conference was a marked success, and was followed by others in 1902 and 1903 under the presidency of Sir Arthur Rücker, and in 1904 under the guidance of Prof. W. A. Tilden, president of the Chemical Society, who was himself formerly senior science master at Clifton.

But though the seed was sown in May, 1900, the Science Masters' Association did not enter upon its corporate existence until 1902, when the second conference resolved itself into a permanent association with Sir Arthur Rücker for its president and Mr. C. E. Ashford, of Harrow, for its secretary and treasurer.

The original objects of the conference, as laid down by its founders, were, first, the attainment of a "clearer method in the teaching of natural science than exists at present," and, secondly, "to do something towards emphasising the value of science as a means of education."

This way of putting the matter rather overlooked, perhaps, how much already had been done in 1900 to improve the methods of teaching science by various schools and public bodies; but the suggestion thus made has done very good service nevertheless, through the association, by accelerating the rate at which the new ideas on the teaching of science have found acceptance in the schools, and by various public authorities, some of whom had exerted for many years, unconsciously no doubt, a potent influence in exactly the opposite direction. For nothing, we understand, has been more notable in the experience of the association than the cordial goodwill with which several of the chief of these authorities have entered into conference with the representatives of the teachers of science in schools on the important subject of the reform of examinations.

Naturally, in this very conservative country not very much in the way of reform has actually been accomplished in the two or three years which have elapsed since the first conference in 1901. But a beginning has been made, and there is every reason to hope that the next few years will show a marked advance in the methods of examination as applied to science. We congratulate this new educational authority on the good start it has made, and we wish it every success in this and other fields in the future.

The society is not and is never likely to be a very large one, for membership is limited to masters teaching in the Public Schools—and the number of these schools does not greatly exceed one hundred—together with a limited number of privileged members, persons interested, that is, in the work of the association. It may be questioned, perhaps, whether it was wise thus to restrict the influence of the society. But it was felt, and all will recognise the cogency of the argument, first, that this limitation would promote a certain concentration

rpose which could not fail to be lost if schools ndely differing types were included, and, dly, that only by means of such a limitation it be secured that the association should ent a definite point of view, based on the te and common experience of its members. ve can well understand that the possession of advantages may have contributed in no small to the early success of the Science Masters' ation.

notice with considerable interest that almost much-abused great public schools, such as Harrow, Winchester, Westminster, Clifton, nham, Rugby, Marlborough, are strongly

Mr. W. A. Shenstone, F.R.S.,
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n. Sec. of the Public School Science Masters' Association.

nted in the list of members, and, in fact, nly one or two schools of this type are esented. But, on the other hand, the own schools, in which science is popularly ed to play a greater part, appear to have oof in many cases. This seems to us a pity. The representatives of these two of schools should be able to afford one r much mutual help in many ways. It be good for masters in the great boarding to know more about the difficulties of their n in the town schools. It would be good latter to rub shoulders with members of ass which, owing perhaps to its greater ndence of examination syllabuses, played an ant though unobstrusive part, at first, in *ctical* introduction of the improved methods of teaching science which are now being so widely and generally adopted.

In its early days the association met always in the rooms of the London University. But last year, by the kind permission of Dr. Gow, a new departure was made, and the members conferred in "Up School" at Westminster, and there is an idea, we believe, that possibly other great schools in or near London may from time to time extend similar hospitality to the association. A most important and pleasant feature of these gatherings has been the presence of numerous friends of education from the Universities, the Board of Education and elsewhere, who, by participating freely in the discussions and mixing with the members in the intervals, have done much to add to the interest and value of the conferences. The only weak points that we seem to detect in the constitution and working of the association are, first, that it has been rather extravagant in secretaries. It has used up no less than three of these officials in about four years, if we include Mr. Hill, who organised the first conference. Secondly, in view of the fact that the society is and is likely to remain a small one, that its members dwell largely at a distance from London, its centre, and that its committee is expected to play an active part continuously in public affairs relating to science and education, the rule which makes members of committee ineligible for so long a period as three years after retirement seems rather too stringent to be wise. Some interval there must be, no doubt, and in the case of some of the large scientific societies an interval of three years is found to work very well. But it appears doubtful if the arrangement is equally good in this case. It strikes us that it may tend to deprive the association of the services of its most active and most available members too much, and that this will be all the more serious if the association should continue to use up its officers at the same rate as in the past.

The present officers are: President, Dr. W. A. Tilden, F.R.S.; President-Elect, Sir Michael Foster, F.R.S.; Chairman of Committee, Mr. C. I. Gardiner (Cheltenham); Treasurer, Mr. J. Talbot (Harrow); Secretary, Mr. W. A. Shenstone, (Clifton), whose portrait appears in the adjacent column. The other members of committee are: Mr. C. S. Jackson (Woolwich), the Rev. A. L. Cortie (Stonyhurst), the Rev. E. C. Sherwood (Westminster), Dr. T. J. Baker (Birmingham), Mr. H. de Havilland (Eton), Mr. D. Berridge (Malvern), Mr. C. E. Browne (Christ's Hospital), and Mr. F. R. L. Wilson (Charterhouse).

The Globe Geography Readers. Senior. By Vincent T. Murché. vi. + 392 pp. (Macmillan.) 2*s.* 6*d.*—Sixteen coloured plates, a great profusion of black-and-white illustrations, and nearly four hundred pages of clearly printed information about the Empire, is a great deal for the amount this book costs. The book provides a pleasant means of learning geography and should be popular.

HOLIDAY COURSES IN GERMANY.

By W. G. LIPSCOMB, M.A.
Headmaster of Bolton Grammar School.

THERE are five holiday courses in Germany announced for the approaching summer: three of them, those at Greifswald, Jena and Marburg are of long standing; and two, at Königsberg and Neuwied, are announced in the Board of Education table for the first time this year. Of the former, that at Greifswald is held in July, and, as most English teachers are unable to get away during that month, it may be passed over in very few words. The clear, bright air of the Baltic is a refreshing change from the moister atmosphere of our islands, and those who have been fortunate enough to be able to take their holidays before the sultry days of August have spoken with enthusiasm of the picturesque delights of Greifswald, the earnestness of the work and the genial kindness of the professors and others who are responsible for the holiday course there.

The Königsberg arrangements are evidently not yet completed, and possibly the date is still unfixed, for a letter to the secretary of the course has failed to elicit a reply.

Neuwied is the centre that has been chosen by the Holiday Courses Committee of the Teachers' Guild for a holiday course to be conducted on the lines that have already proved so successful at different centres in France and at Santander in Spain. These courses are intended for English people, and their aim is to give opportunities not only for studying the language, but also for learning the customs and ways of thought and all that is included in the term *Realien* of the country. To some it may seem a mistake to attend a course at which all or nearly all of the students are fellow-countrymen, but the course at Neuwied will be under the management of Mr. Longsdon, a veteran at this kind of work, and it must not be forgotten that for those who are visiting a foreign country for the first time, and whose acquaintance with the language is very small, it is a great advantage to have as guide, philosopher, and friend a man of experience, who will be able to help them to make the very best use of their time during the short period that is covered by a summer holiday course. For anyone to whom Germany is unknown there can hardly be a better centre than Neuwied. It is true that the Rhine valley is very hot in August, but Neuwied is situated in one of the broadest and most open parts of the valley, and it is within easy reach of some of the most noted and romantic scenery of the cradle of German civilisation. The Siebengebirge, the Eifel, the Mosel valley, with Trier and its famous Roman remains, Cologne, Bonn, Koblenz, Ehrenbreitstein, Bad-Ems, and the romantic stretch of river from Koblenz to Bingen,

> Where Nature, nor too sombre nor too gay,
> Wild but not rude, awful yet not austere,
> Is to the mellow earth as autumn to the year,

are all within easy distance, and the steamboats afford a pleasurable means of reaching the points of interest. In this part of Germ bicycle will be found useful. Neuwied it famous for its educational establishment contains one of the noted Moravian schools.

The course is organised for English stu and the Holiday Courses Committee o Teachers' Guild has many years of expe behind it. Dr. Biese, the Director of the Gymnasium, who is largely responsible f programme of work, is an earnest student language and literature of his own countr will himself give two series of lectures—"G Life and Works" and "Wahrheit und Dich "Scientific Study and Practice in Phonet also promised. A handbook of the holiday c arranged by the Teachers' Guild may be ob (post free 6½d.) from the Secretary.

The Jena Holiday Course is the old Germany. It was founded in 1889, an followed in 1894 by Greifswald, and in 1 Marburg. The programme includes lectu natural science, pedagogics, theology and a there are special language courses in G French and English. The value of the cou pedagogics is vouched for by the name o Rein, who has made Jena famous for the st this subject. The University of Jena has a ing department for teachers, to which a pra school is attached, and doubtless many E teachers will be attracted to the lectu Dr. Lehmensick on the science of teaching trated by lessons given to one of the classes practising school. The town of Jena, w memories of Luther, Schiller and Goethe, of interest, and the cost of living there i small. It is possible to get lawn-tenn boating, and there is excellent bathing Saale. The town itself, lying deep down the hills, is in August very stuffy, but roo be obtained on the higher ground outside th There are interesting and beautiful walks immediate neighbourhood; and farther afie within easy reach, there are Weimar, Eis Rudolstadt, Schwarza, and some of the typical and exquisite scenery in the Thu Forest. Indeed, English people who atte holiday course would do well to devote a fe either before or after the course to a walki in the forest. It can be done at ext moderate cost, and the bracing air and be scenery will well repay a few days spent i dering with a knapsack among the hills an It is easy to send one's luggage to aw somewhere on the main line to Eisenac thanks to the ample communication, to rejo almost any point. The holiday course at each year being attended by an increasing of students. The numbers rose from 108 to 273 in 1902, and in the latter year the representatives from fourteen different co including 155 from Germany and twenty-fi England. From these figures it is evide the greatest possible opportunity is affo English people for intercourse and conv

mans. There is from the beginning a *camaraderie*, and the excellent arrangede for frequent excursions and entertainone kind and another give every facility g acquaintances and enjoying the society llow *Kursisten*. The full programme of the already published, and can be obtained Dr. Schnetger, Gartenstrasse 2, Jena.

g is situated on the Lahn, about half-:en Frankfort and Cassel. It is a pictu- town built on the steep slope of a lofty eep that in some houses the lowest floor :ered on one side and the highest floor on

Far up on the top of the hill, coma magnificent view, stands the castle, in ther, Zwingli and Melanchthon met in he surrounding country is hilly, well ıd watered, and, although the weather in often very hot, the air on the hills is invigorating, so that few places afford a lthy and enjoyable holiday. In the istricts in Hesse the peasant costumes t and picturesque, and walks around ıre full of interest and charm. There is thing in the Lahn and some boating, and s one keeps to the valleys the roads are or cycling. There are two comfortable e Ritter and the Pfeiffer, where the e moderate. Boarders are received by tary of the Holiday Courses, Herr A. illa Cranston, and there is another ex-*ısion* kept by Herr Schellenberg near

Rooms are very cheap, but those who air are advised to take rooms in the rt and on the outskirts rather than in :ts of the town. There are good restaurı gardens, at which meals can be oba very modest sum. The work of the ourses is confined to modern languages ure. Phonetics and methods of modern-eaching form an especial feature of the ıd there will this year be a *Probeklasse* of hildren for the purpose of demonstrating phonetics in the initial stages of modern-eaching. There are lectures in German, ıd English, and it is intended this o start Italian and Spanish courses, by natives of Italy and Spain, provided sufficient number of students wishing to e languages. In order to give as much y as possible to foreigners for practice in German, a system which was to some oduced last year with successful results ontinued and extended this year. A eacher will be appointed for an hour's on daily with every two foreigners. As so at Marburg, the attendance at the urses has steadily increased from year to the numbers in 1903 reached 228, of vere Germans, 64 from the British Isles, om America, while the rest consisted of tives from nearly twenty different

The programme can be obtained from Cocker, Villa Cranston, Marburg A.D. rom me.

HOLIDAY COURSES IN FRANCE.

By WALTER ROBINS, B.Sc.
Technical Institute, Leyton, E.

STARTING from small beginnings at Paris and at Caen, the practice of holding holiday courses has extended to many other towns in France, and this year courses are being organised for July and August in the large towns—Paris, Caen, Tours, Nancy, Grenoble, Dijon, beside courses at Honfleur, St. Malo, Lisieux and Bayeux. It is perhaps a little difficult for a student to decide which town to select. It will be found that the schemes of work as given in the various programmes are on very much the same lines, whilst the total cost does not greatly vary, except, of course, in the case of the more distant towns, where the cost of the journey is a serious item. In selecting a course, one has to consider the matter from two points of view; first, the suitability of the place as a holiday resort, and secondly, the nature of the course itself. Now, as the main object in view in attending these courses is to hear spoken French, I think that the suitability of the place chosen as a holiday resort is of considerable importance. Unless a teacher has some examination or other special object in view, I do not think he is wise, in view of his health and consequent efficiency, to spend several hours each day of one of the hottest months of the year in a class-room, and that, too, after three or four months of the ill-paid and monotonous drudgery of the secondary school during its longest and most trying term.

Teachers will do well to select one of the larger towns in which to follow a course, one in which there is plenty going on and plenty of opportunities of meeting French people. The aim of these courses is to give persons a means of hearing spoken French, of training their ears to recognise words already familiar to them in print, and of getting in touch with French manners and customs. It is useless to go to France only to do grammar and translation, there are ample means of doing that in every large town of England. After all, the actual subject of the lectures is not of great moment provided it is interesting and quite familiar to us. Students and teachers should bear in mind that they will not derive much benefit from these holiday courses unless they possess a fair knowledge of the written language, although there may be many who will find them an easy means of spending an interesting holiday without being too serious about work. There is one point to be borne in mind in the choice of a centre, and that is that the sanitation in the smaller towns is often far from perfect. Things are tolerable enough in such places as Paris, Caen, and Tours, but one has to be careful in choosing a place for a three or four weeks' stay in the smaller provincial towns.

The holiday courses held in Paris during August, the month available for most teachers, are those conducted by the Alliance Française and

by the International Guild. The courses of the Alliance Française are held at 186, Boulevard St. Germain, one of the best-known thoroughfares in Paris, and quite close to the river. The committee of management includes several members of the Académie Française and of the Institut, the director of the courses being M. Brunot, professor at the Sorbonne. Two series or courses are held, the first in July and the second in the month of August. The fee for the month is 60 francs, or for two months 100 francs. The subjects taken in the July course include a course of instruction in scientific French grammar, phonetics, historical grammar, and modern French literature, including the study of such authors as Victor Hugo, Balzac, Thierry, Sainte Beuve. Lectures are also given on the geography and institutions of France. Conversation circles for practice in speaking French are held, and a feature which some will find useful is a short course of lessons on diction and expression. The course in August is, with slight changes, practically the same as that in July. At the end of the course examinations are held, and diplomas—elementary and superior—are granted to candidates.

The courses held by the International Guild are arranged for the months of July, August, and September, four weeks in each month. A ticket for one month costs 75 francs, for two months 140, and for three months 200 francs. Two hours' instruction are given each day of the week, Sundays and Thursdays being excepted. The first hour is devoted to a lecture and the second to conversation practice in circles of not more than fifteen students. The work of the International Guild is carried on throughout the year at 6, rue de la Sorbonne, and students who attend any of the holiday courses partake of several advantages shared by the regular students; for example, they have the use of a reading-room—with books of reference—to do their work in. There is no difficulty in obtaining board with French families in Paris. Lists of addresses can be obtained from the Secretary of the Guild or from the Teachers' Guild, Gower Street, London. It should be remembered, however, that in Paris during August the heat is often extremely trying, and work becomes very difficult.

Coming now to provincial towns, we have first and foremost the courses held at Caen, in Normandy. These courses were established several years ago, under the auspices of the Teachers' Guild, and were reorganised in 1898, and have been carried on since that date by a local committee which includes officials of the University and the Lycée. The number of students attending has steadily grown since the reorganisation, and last year the number of 120 was reached. Caen offers many advantages both to those who are attending more for the sake of a holiday and to those who are desirous of doing solid work. It is a busy garrison town, and possesses many buildings of great historic interest. The sea is within easy reach by tram or rail, and the country round is excellent for cycling, with places of such deep interest as Falaise and Bayeux at no great distance. Speaking generally, I should advise students to choose holiday courses which are held in a university town. There is more certainty that the work is done in suitable buildings and under better conditions than is the case with the courses which have been organised in several small places during the last year or so. The lectures, conversation circles, and other exercises at Caen are given in the Lycée, a commodious building, and are conducted by professors holding the degree of *agrégé*. One very good feature of the work at Caen is the small size of the conversation circles, which consist in many cases of not more than seven or eight students. Students should be careful to look after this point, as it too often happens in a large circle that all the talking is done by one or two pushing students, and the others find themselves unable to get in a word.

English students can attend lectures at Caen throughout the academic year, but the special holiday courses are held during July and August. They were originally held in August only, but there were so many teachers whose holidays began early in July that a similar course was organised in that month, and is now a regular institution. Elementary and advanced classes are arranged. The morning's work includes a lecture, followed by reading lessons and a conversation circle. There is also a class for young people. For evening work, subjects are set for composition and translation. The afternoons are free, but twice a week there are pleasant re-unions of professors and students. On one or two evenings in the week there is a lecture on some subject of general interest. This year M. E. Lebonnois is giving a course of lectures on "The Masterpieces of French Poetry." M. H. Roussot will lecture on "Le Romantisme," whilst M. R. de Marton will give an interesting series of lectures on Jean Jacques Rousseau, his life, works and influence. There will also be a course of phonetics by M. E. Coullet.

As at Paris, there are examinations held at the end of the course for diplomas. The diplomas at Caen are of three grades, the *Diplome de langue française, degré secondaire; Diplome de langue française, degré supérieur;* and *Diplome supérieur de la langue et de la littérature française.* All three examinations include a good deal of oral work, besides a written part; the examination for the highest diploma being somewhat severe. A new feature of the Caen course this year is that any student who attends for more than three weeks will receive a French periodical devoted to grammatical studies for the following twelve months. With regard to cost, the fees range from 25 francs for one week to 70 francs for the month. Mr. W. Robins, of Wanstead Cottage, New Wanstead, Essex, will send a pamphlet giving full details and list of lodgings on application.

The Teachers' Guild this year is again holding holiday courses at Tours and at Honfleur. I can say from experience that the courses organised by the Guild are extremely good. The courses at

; and at Honfleur last three weeks in August, fourth week is held if sufficient students is a desire for it. The scheme of work in places is on much the same lines as at Caen t Paris. Viewing the two places as holiday , Honfleur, situated at the mouth of the will possibly appeal to those who wish for aside, but it is not by any means a modern ng-place, but more of the tumble-down -town nature. Tours, on the other hand, is d in the midst of a highly picturesque and cally interesting part of France. It is often that in Tours and the neighbourhood the French is spoken. The fact is that the French is spoken wherever the best edu- Frenchmen, the best actors, preachers and tes are found, and it is quite a mistake to e that in these days of good communication rench (whatever that is to be defined as) is r to Tours or any other place.

have now to say a word about the courses on, Nancy and Grenoble. The courses at are held at the University, and in August e of about twenty lessons on different sub- s to be given. There are also classes for e in conversation. Dijon is 315 kilometres Paris, and certainly possesses some interest- tures, but it cannot be said that there are ecial advantages offered.

courses of study at the University of Nancy en throughout the year, but there does not to be any special holiday course suitable glish teachers. During July and August are lectures at the University of Grenoble students of any nationality may attend. is no special provision for the needs of h teachers. Considered as a holiday resort, wn and neighbourhood will well repay a A holiday course was established two years Bayeux. The course of work is on very lines to those given at Caen, Tours and ur. Bayeux possesses objects of great t in its cathedral and in the well-known y, but apart from these the student will find the town extremely slow.

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g of Electro-magnetic Machinery. By B. V. Swenson Frankenfield. 410 pp. (Macmillan.) *12s. 6d.* net.— he first of two volumes which will form a college text- d a work of reference for engineers. The procedure l is that adopted at the University of Wisconsin. The volume treats of direct-current electro-magnetic ma- and apparatus. The treatment of each experiment is ained, and includes (1) a review of the theory; (2) a ion of the method involved; and (3) practical applica- Questions which bear directly on the subject are inserted d of many of the experiments. Mathematical analysis avoided except where it adds to clearness. Numerous s to standard literature are included in each section. the instruments used are fully described in a pre- section, and an appendix on "Shop Tests" is added g the methods employed in the testing department of a The volume can be strongly recommended to those in the commercial applications of electricity.

HOLIDAY FRENCH COURSES IN SWITZERLAND.

By W. M. Conacher.

THE holiday courses in Switzerland for the study of French will be held during the summer at the universities of Geneva, Lausanne, and Neuchâtel. The courses extend from the middle of July to the end of August at Geneva and Lausanne, and, in the case of Neuchâtel, to the middle of September.

The programmes of the three centres vary somewhat, that at Lausanne being the more general in character, Geneva more strictly pedagogic, while Neuchâtel treats the more homely subjects of composition, translation, grammar and diction, more extensively than the sister seats of learning. Tabulated the subjects are as follows:—

Geneva.	Lausanne.	Neuchâtel.
Litterat. classiq.	Politiq. Contemp.	Grammaire supérieure
Litterat. mod.	Theâtre franc.	Composition, écrit et oral
Lect. analytique	Phonologie	Interprete d'auteurs
Pedagogie	Innovatns. prat. dans l'enseignement	Le romantisme
Hist. de la lang.	Histoire d. lang.	Waterloo
Psycholog. Pedag. appliq.	Style des grands écrivains	Talleyrand
Stylistique	Stylistiq. comp.	Petrarch
Théorie et prat. du style	Victor Hugo	Auteurs modernes
Dict. Prononc.	Dict. Prononc.	Influences étrang. litt. fr.
		La III. République
		Diction. Prononc.

Teachers intending to attend the courses will naturally first obtain full information from the *Secrétaires des cours de vacances*. The courses are, strictly speaking, intended for persons engaged in teaching French or who are members of some university. Teachers who cannot get away for the initial lectures are admitted subsequently. A certificate is given after an examination at the end of the course, and it may be noted that, as is the usual French custom, the oral is an integral part of the examination. Private lessons, or lessons for groups, may be arranged for in such subjects as composition, diction, &c. Geneva has, as a speciality, a dramatic class, and one for singing; while a conference at Neuchâtel, "*Qu'est ce que la folie?*" may interest teachers fresh from pupils' summer exams.

The secretaries of the various courses also undertake to put intending students in communication with *pensions* and hotels. It may be mentioned that *pension* prices vary from 100-150 francs per month at Lausanne and Geneva, and from 80-120 francs per month at Neuchâtel. It is advisable to secure rooms in advance, as the two first-named places are apt to be full during the summer vacation. The fees for the courses range from 40-60 francs.

With regard to the respective merits of the

three towns, Geneva has the widest reputation as a seat of learning, whereas in Lausanne there is a larger proportion of people who live to teach, or teach to live, than in any town in the world. Neuchâtel has the reputation of possessing a better French accent than any town in Switzerland, not so much on account of its proximity to the frontier as of the presence of many descendants of French refugees during the Revolution.

As for the influence of weather on the enjoyment of a stay in Switzerland, it must be admitted that, if anticyclones are prevalent in August, all three places are liable to be warm, and students may find it well to take a day off and flee unto the mountains. Lessons do not take place on Saturday, and on these days the professors organise excursions into the mountains.

Neuchâtel, though it has only a distant view of the Oberland bernois across its beautiful lake, has many delightful walks in the wooded glades of the Jura. Ladies would probably find this town preferable, especially if they are in earnest so far as the studious side of the visit is concerned.

Geneva is undoubtedly the finest of the three towns, with more life and amusements. Its quay, with the celebrated view of Mont Blanc, and the blue Rhone bursting from the lake, make it a charming place, especially in the cool of the evening. The excursions organised by the committee at Geneva include a visit to the valley of Chamounix. Otherwise anyone wishing to do some climbing will not find any greater height than 2,000 metres nearer than Chamounix, though Ruskin has sufficiently extolled the glades of Savoy and the distant prospects of greater things.

Lausanne is, perhaps, more conveniently situated for moderate climbs on a one-day outing. Anyone leaving the town by the 5 o'clock or 7 o'clock trains can be at Aigle, Martigny, or Montreux in time to climb a good deal before the heat of the day. The Rochers de Naye at the head of the lake, for example, is the local Rigi with a similar view of the Oberland and Valais round to the Juras and distant France. Somewhat more difficult are the Dent d'Oche, Tours d'Ai; and, for an easy snowpeak, one has the Diablerets handy. More difficult still, but safe enough with a guide, is the stately Dent du Midi above St. Maurice.

Many people, however, will want to take things easy. The Lac Léman is a rest cure itself. It has not the picturesque beauty of the Lake of Lucerne, but Lausanne is fortunately not Lucerne. The praises of the "quiet inland sea" have been enough sung by poet and thinker, historian and sage who often lingered here.

Gibbon and Byron, Calvin, Voltaire, Matthew Arnold and Gordon, with Rousseau, Senancour and St. Beuve, are but a few of the names graved on our walls and in our hearts. The steamers are excellent, boating is plentiful and safe with, as an eye pleasure, those strange "picaroon craft" (the phrase is a romantic youngster's), the *barques de Léman*, which bring the stones across from the quarries on the other side of the Places to be seen and visited by the steam quiet Vevey and cockney Montreux, hack Chillon, Evian where French politician recruiting their forces and lolling in the su Gorge du Trient off the Rhone Valley, the striking Alpine cleft within a day's distance.

It is worth knowing that the railways is *billet circulaire* for one month, entitling the h to travel on any Swiss line during that tim distance and any number of journeys for francs, 3rd class!

In conclusion I would say, Neuchâtel for French and those who want to work, Gene those preferring a big town, and Lausanne most English and, perhaps, most centra expeditions.

THE BRITISH ASSOCIATION A CAMBRIDGE.

THE meeting of the British Association w held this year at Cambridge, from We day, August 17th, to Wednesday, A 24th, under the presidency of the Right Hc J. Balfour, M.P. The work of the Associat mainly carried on in eleven sections, to ea which a set of rooms is assigned for comr and sectional meetings. The president o section of Educational Science this year i Lord Bishop of Hereford, who, it will be re bered, was for many years headmaster at C College. The other sections and their presi are as follows:—

Mathematical and Physical Science, Prof. H Lamb, F.R.S.; *Chemistry*, Prof. Sydney Y F.R.S.; *Geology*, Mr. Aubrey Strahan, F. *Zoology*, Mr. W. Bateson, F.R.S.; *Geography* D. W. Freshfield; *Economic Science and Sta* Prof. W. Smart; *Engineering*, Hon. C. A. Pa F.R.S.; *Anthropology*, Mr. Henry Balfour, *Physiology*, Prof. C. S. Sherrington, F. *Botany*, Mr. Francis Darwin, F.R.S.

The presidents, vice-presidents, and secre of the several sections constitute, together the former presidents of the sections, orga committees for the purpose of obtaining inf tion upon the papers and reports likely to be mitted to the sections, and of arranging the in which it is desirable that they should be ta

In addition to the president, the other offic the section of Educational Science are a lows:—

Vice-presidents: Prof. H. E. Armstrong, F. Mr. Oscar Browning, Rev. H. B. Gray, an J. N. Keyne. *Secretaries:* Mr. W. M. Helle *corder*), Prof. R. A. Gregory, Dr. C. W. Kim and Mr. J. H. Flather.

In the case of the Education section, the adopted is to decide upon subjects for disc at the meetings and invite persons of author experience to contribute papers upon these

By this means attention is concentrated
few matters requiring the expression of
ɛnt opinion, instead of being diverted to a
of subjects of minor educational impor-
The subjects for this year's meetings have
been decided upon, but the hope may here
essed that they will be of a character in
local authorities are interested; for it is
sirable at the present time to establish the
ions and sketch the superstructure of a
of education which recognises local re-
ɛnts.

ne can join the Association by becoming
ɔciate, annual member, or life member.
tes pay £1, which entitles them to attend
he sections or other meetings and to receive
ɔrt of the annual meeting at two-thirds of
ɔlication price. Associates are not eligible
e on committees or to hold any office.
members pay £2 for the first year. They
gratuitously the annual reports of the
tion for the year of admission and for every
g year in which they continue to pay a
ɔtion of £1 *without intermission*. Life
ɛs pay a composition fee of £10, which
them to receive gratuitously the annual
of the Association which may be published
ɛ date of payment.

bers and associates can attend the meetings
ɔf the sections, or the evening lectures, of
there will be three; namely, one by Prof.
Darwin on "Ripple-marks and Sand-
; another by Prof. H. F. Osborn on "Re-
explorations and Researches on Extinct
alia"; and a third by Dr. J. E. Marr on
Forms of Mountains."

hoped that the meeting will be one of
interest both to the members of the Associa-
d to a large number of Colonial, American,
reign visitors who are being invited to take
the discussions in the various sections.

ngements are being made for holding the
gs of the sections as far as possible in the
sity departments concerned with the sec-
subjects, and visitors will thus be enabled
the facilities which are now available in
idge for scientific study and research.

lighter side of the meeting will include a
r of excursions to places of interest in the
ourhood of Cambridge, garden parties,
saziones and receptions.

ıs been arranged with the different railway
nies that return-tickets at a single fare and
ter will be issued from the principal stations
United Kingdom to Cambridge; these
, which will be available from August 16th
ust 30th, may be obtained by members and
tes attending the meeting.

lications for tickets should be sent to the
ıry of the British Association, Burlington
, Piccadilly, W., before August 11th, and
be accompanied by the subscription. After
11th the tickets can only be obtained at
ception Room of the Association, the Guild-
ambridge.

SUMMER COURSES OF NATURE STUDY.

I.—At Port Erin, Isle of Man.

THE Liverpool Marine Biology Committee, of which Prof. W. A. Herdman, F.R.S., of the University of Liverpool, is chairman, in response to a demand, is willing to make arrangements for a special class in elementary Marine Biology, to illustrate the principles of nature-study. The class will be held at the Port Erin Biological Station, in the Isle of Man, during the coming summer vacation, probably the first fortnight in August. The Station is a new building situated on the sea-shore, and is admirably adapted in every respect for classes of this description.

A large laboratory on the first floor, provided with fourteen windows, will be set aside wholly for this purpose during the time of the class. Each member of the class will occupy a table or workplace opposite a window, and will be provided with the necessary animals (or when possible, and as is much better, will be shown how to collect them himself), salt and fresh water, and all materials and apparatus necessary for the work.

The class will be limited to twelve students, each of whom will pay 5s. to the L.M.B.C. for the use of the laboratory, and in addition a tuition fee of 5s. These fees should be remitted to Mr. H. C. Chadwick, the Curator of the Biological Station, before the opening of the class. No definite time-table of the class work can be drawn up, and the time and nature of the work will depend largely on the tides, weather, &c.

The course will probably cover two weeks, and half of each day is to be devoted to work and the other half to recreation.

So far as work is concerned, the class will spend a great deal of time in the laboratory, examining animals in the living condition, and making simple biological experiments thereon. Collecting excursions, with the object of studying the animals in their natural surroundings, and also expeditions for collecting and dredging from boats, will be organised and led by members of the L.M.B.C. At other times short addresses and demonstrations in the aquarium and museum will be given by Prof. Herdman, and possibly others. No previous knowledge will be supposed. The class work will be directed by Mr. Chadwick.

Of recreation there will be plenty. Port Erin is a delightful holiday resort, with good boating, bathing, and fishing. The country round is magnificent and offers every inducement to those fond of walking.

The Treasurer of the L.M.B.C. wishes to point out that, as the charge is at about one-half the usual rate for accommodation, it must be regarded as a special charge for this occasion, and for a class of not less than twelve, and will not apply to single students or at other times.

Each member of the class must come provided with a large drawing-book, pencils and india-

rubber and a duster or small towel. All further apparatus, as follows—enamelled dissecting dishes, with wax at the bottom, several crystallising dishes and watch glasses, microscope slides and cover-glasses, dipping tubes, some simple dissecting instruments, a magnifying hand lens, occasional microscopes, and collecting jars—will be lent, without charge, by the L.M.B.C., to the students.

If the student wishes to take away any animals for examination at home, bottles, tubes and methylated spirit and other preservatives can be bought from the Station stock on application to the Curator.

Any further particulars may be obtained on application to Mr. H. C. Chadwick, Biological Station, Port Erin, Isle of Man.

II.—Hartley University College, Southampton.

During the first fortnight in August, 1904, a summer course of Nature study for teachers and others will be held at the Hartley University College, Southampton. The work of the course may be conveniently divided into two portions. Every morning there will be a short lecture, followed by practical work on the subject of the lecture.

The first week will be devoted to the study of the structure of the flowering plant, and students will learn to use the compound microscope and to make preparations illustrating the structure of plant cells and tissues. During the second week the functions of the flowering plant will be similarly studied. The students will perform their own experiments, and these will include the demonstration of osmosis and diffusion of gases in plant tissues, respiration, transpiration and photo-synthesis. In all cases the experiments will be performed with the simplest possible apparatus, so that they may be adapted for introduction into secondary or elementary schools.

The second part of the course will comprise the study of the plant in relation to its environment, and this will necessarily be done in the open air. Every afternoon (except Saturdays) will be devoted to an excursion, having for its object the study of some type of vegetation. The collection of plants, more especially rare specimens, and desultory observations not bearing on the main object of the excursion, will, as far as possible, be discouraged.

For the study of plant associations Southampton is practically without a rival in the United Kingdom as a centre, being within easy reach of the New Forest and the Isle of Wight.

The exact number and duration of the excursions will be settled finally when the class meets at the College on August 1st, but the following expeditions are among those contemplated:—For the study of the flora of the chalk downs an excursion will be arranged to Shawford Down and Winchester. For the flora of a sandy beach, St. Helen's, in the Isle of Wight, will be visited. An excellent example of a salt-marsh is found at Hythe, a few miles south of Southampton, on Southampton Water. Marsh and aquatic occur in great abundance and variety on Be Heath, while the manifold attractions of th Forest need no recommendation to the lo Nature.

For the practical work indoors a note-boo razor will be necessary, all other apparatus lent free of cost. Students are, however, r sible for any damages to apparatus while in charge. Students who have microscopes of own are advised to bring them, and to noti lecturer of their intention to do so.

The fee for the fortnight's course will b The total expenses in connection with the sions should not amount to much more tha for the fortnight. Apartments may be ob in Southampton in great variety, and the ex of living need not exceed 21s. per week, an be even less. A list of suitable apartme varying prices may be obtained by send stamped addressed envelope to Mr. D. K Hartley University College, Southampton. class is open to students of either sex.

Further particulars of the course may b tained on application to the lecturer, Dr. Jenkins, Hartley University College, S ampton. It is believed that the practical will be found useful by students preparin London Matriculation Botany (new rules) as an introduction to London Intermediate S examination in that subject.

CAMBRIDGE SUMMER MEETIN

THIS year the Summer Meeting will b under new conditions, for the Cam Syndicate have accepted an invitati hold it at Exeter, in connection with the Albert Memorial College, which has bee several years "affiliated" to Cambridge as ture centre. While there must be consid loss in the absence of the usual University ground, the change is not without some pensations. Oxford and Cambridge are no known to many students, and the opportun spending some time in an old cathedral city, larly rich in historic associations, and wi unbroken record from the earliest times of development, will open up new sources terest; and the opportunity of seeing some loveliest scenery in England will doubtless a many distant students, who will rejoice i opportunity of obtaining reduced railway fa visit the west country.

Of course, in Devonshire, the special chosen for study *must* be the Age of Eliz which will be dealt with both from the hi and literary side by many experts. The names is most attractive, but it would b vidious to particularise, so we advise our re to write for the full prospectus.

The natural history of the locality will be t

; geological, botanical and entomological
'hile a very interesting section will deal
al antiquities and literary associations; *e.g.*,
:xeter Book" will be expounded by its
ditor, Mr. Gollancz, and the cathedral and
ıcient buildings, as well as the mediæval
who are associated with their foundation,
he subject of a series of lectures. Being
:w neighbourhood, more time than usual
devoted to excursions, so arranged as to
e the lectures in the groups we have
ed.

History of the Navy will be traced by
perts as Lord Brassey, Sir W. White and
ınd will be brought thoroughly up to date
ccursion to Plymouth Dockyard, when also
ɜ will be visited, where the historic game
s was played.

rn Biblical Criticism will be represented
. Kirkpatrick and Prof. Ramsay, who will
respectively on Old Testament criticism,
condition of the Roman Empire as affect-
Paul's work.

interesting Conference is promised on
s of Poor Relief in Foreign Countries, and
f lectures on the history of the English
.aw.

ly, a strong Educational Section, of solid
:o teachers, will be opened by a lecture
'rof. Sadler, while Mr. Leach will connect
the special period of study by lectures on
under Edward VI. and Queen Elizabeth.
courses on modern methods of teaching
given; on modern language teaching with
tary phonetics, accompanied by conversa-
classes in French and German; on the
stic" method, graphs, nature study, and the
of physiology and psychology to teachers.
:r, a course of Manual Training is offered at
lmirably-equipped Manual School attached
Exeter College.

thoroughly international character of the
g will be well maintained, and several social
ıgs are promised. Perhaps not the least
ıle part of such meetings is the opportunity
:d of comparing notes, exchanging opinions,
sting methods, and of deriving encourage-
from a sense of sympathy. We heartily
end the opportunities offered for combined
and refreshment by a sojourn in Devonshire
h a time. Full information may be obtained
he Secretary for Local Lectures, Syndicate
ngs, Cambridge.

ıal of Qualitative Chemical Analysis. By J. F.
:ory. 130 pp. (Ginn.) 4*s.* 6*d.*—It is difficult to
ne where this volume improves upon the style or methods
in several other text-books which have been written to
mately the same standard. We find a satisfactory treat-
the simpler wet and dry reactions, and details of the
tic examination for metals and acids in solution; no
ır group-separations are given. We are not yet accus-
to the following orthography: sulfur, sulfid, chlorid,
acid, hydroxid, &c.

EDINBURGH SUMMER MEETING.

ENCOURAGED by their success last year, the promoters of the Edinburgh Summer Meeting have decided to hold it again this year, during the month of August. The first of its kind organised on this side of the Atlantic, the meeting was instituted in 1886, and aims at being a Summer School of Nature Study, Modern Languages and Social Philosophy, and to create an atmosphere akin to that of the Chautangua Summer Assembly in the United States. The meeting expresses an attempt to bring together specialists of various kinds, who should, however, be in general sympathy with each other, with a general aim towards order and synthesis of knowledge. From the earliest years it has been the prime object not simply to supply courses of individual value but to increase their usefulness through parallelism and contrast. The parallel teaching of the natural and social sciences has always been a feature.

This year the meeting will deal largely with the study of "Central Scotland, its natural and historic interest;" and in planning the course the requirements of Scottish and English teachers of Nature Study are being made the primary consideration. Edinburgh and its region furnishes unique facilities for carrying out this object. It may safely be said that no part of the kingdom affords so many opportunities as "Modern Athens" of organising a complete and representative series of excursions to so many places of historic and natural interest, and such excursions will form a leading feature of the meeting.

From the Outlook Tower in which the meeting is held (immediately adjacent to the historic castle and having an equally commanding view) one sees the whole city and district, a vast expanse of land and sea. As a holiday resort the metropolis of the north stands almost unrivalled, occupying, as it does, the centre of a region unsurpassed in interest to students of nature and fascinating in its historic and literary associations.

To the jaded teacher and visitor alike, who do not desire in the season of recreation entirely to dissociate themselves from the things of the mind, the Summer Meeting offers an atmosphere mentally and morally stimulating. This holiday course embraces nature study, modern languages and literature, historical and social science and education. The programme contains such outstanding names as those of Sir John Murray, Prof. Arthur Thomson, Mr. J. G. Goodchild, Prof. Patrick Geddes, Mr. George Eyre-Todd, the well-known Scottish author, Mlle. Marie Bonnet, of Montpelier University, M. Frey, Mr. T. B. Rudmore-Brown and others.

Of almost equal interest to the courses of lectures will be the series of excursions to be organised to various places of interest in and around Edinburgh, under the guidance of competent leaders, active and sedentary studies being thus combined.

In former years this summer meeting has been well attended by foreign teachers and visitors, and it has, indeed, on more than one occasion assumed the character of a Summer School of Modern Languages. This year provision is being made for such a course, and it is not the least interesting feature of the meeting that it is thus the medium of bringing together teachers and visitors of different nationalities, affording opportunities of mutual teaching and interchange of ideas.

Teachers and others desirous of attending the meeting or interested in it should forthwith apply for a copy of the syllabus, which is to be had free on application to the Secretary, Outlook Tower, University Hall, Castlehill, Edinburgh, who will be glad to give every information.

OXFORD VACATION COURSE IN GEOGRAPHY.

IF a sufficient number of students send in their names by June 30th, it is proposed to hold a vacation course devoted exclusively to Geography, at the School of Geography, Oxford, between August 2nd and 16th, both days inclusive. The course is planned for teachers, but others whose work has a geographical aspect will find it useful. Mr. Mackinder will deliver the opening lecture and three others on the "Relation of Geography and History," and Mr. Beazley will take for the subject of his three lectures "The Advance of Geography: Land Travel, Oceanic Exploration, Scientific Geography." Dr. Dickson, in addition to spending two whole days in the field showing practically the methods of map-making with plane table and prismatic compass, will devote six lectures to the discussion of "Some Problems in Physical Geography." Dr. Herbertson will give six lectures on the "Geography of South-east England, especially of the Oxford District," which will be illustrated by map demonstrations and three local excursions. A special whole-day excursion under the guidance of two or three of the lecturers will be arranged for a day in the second week of August.

The fee, which includes all charges for the use of apparatus and materials, but not the travelling expenses incurred in connection with the excursions, will be £3 3s. Special certificates of attendance will be issued to those who follow the whole course. Names of intending students should be sent *as soon as possible* to the Curator, School of Geography, Oxford.

Elementary Physics and Chemistry for the Use of Schools. Book III. Chemistry. By John Bidgood. 144 pp. (Longmans.) 2s.—Mr. Bidgood suggests that this little book will prove of service as a reading and lesson book. Provided the reader does what the author tells him in the book his reading will be of service. The directions given for the performance of experiments are clearly and simply expressed, and short summaries are provided at the ends of chapters.

BERN MEETING FOR TEACHEI DRAWING.

THE second International Congress Development of the Teaching of I will be held at Bern this year from 3rd to 6th. The first Congress was held i in 1900, and, when the suggestion was ma the second should take place in Switzerl Genoud, the official delegate from that c hastened to urge as many teachers to c possible, so that, while deliberating toge the graver matters connected with their wo might gather inspiration from the beautiful s

The programme for this year's meeting, a not yet definitely issued, will be arranged sections, the first treating of the teac drawing from its educational aspect, a second being devoted to matters relating teaching of drawing considered profession technically. In the first section papers a read and discussed on the educational v drawing, the correlation of drawing wit branches of study, methods of teaching dra the kindergarten, elementary and se schools, and the training of teachers of d The second section is to take up the pres dition of professional, technical and artisti ing in various countries, with methods of and schemes of apprenticeships and schol The meetings will be held in the Unive Bern, and in the lecture-rooms specimens to demonstrate the teaching will form an i ing exhibition.

Bern itself, as the capital of Switzerlan interesting town with unique features: these may be mentioned the footway in streets, which runs under a continuous between the arches of which one gets pict peeps across the bright market-stalls, mediaeval fountains in the middle of the and the old gateways. The greater part town lies high above the river Aar, so t bridges spanning it are lofty. From the nade near the Federal Government Pal also from the shady square around the ca there is a grand panorama of the distant the Bernese Oberland, whence the effect Alpine glow is frequently caught on thei summits.

The indefatigable Swiss organising co has arranged for three excursions to b during the meeting: one to a country re very far out of the town which comma views of the Alps; another will be t Fribourg, the town known to many of from Ruskin's sketch of its turreted v "Modern Painters." The third excursion a longer one, first to the town of Thun, an by steamer along the lake of Thun as far laken, so that the Jungfrau may be see closely.

The committee is also compiling a list o and *pension* mountain resorts in different

land to which members may go and enjoy
r stay, while the facilities offered by the
companies in reducing the fares will, it is
enable many a teacher of modest means to
longer holiday among the glorious moun-
id lakes.

membership fee for the Congress is ten
M. Oscar Blom is the Treasurer, Direc-
Musée Industriel, Bern; or the sum of
may be sent to the English representative,
thel M. Spiller, 11, Highbury Crescent,
, N. M. Genoud has, meanwhile, esti-
that the entire cost of travelling from
and a fortnight's stay in Switzerland need
more than £8, while a prolonged visit
only mean the additional cost of about five
per day at various *pensions* mentioned on

uch of the success of meetings of this kind
s upon adequate preparation beforehand
is earnestly requested that all who can
y do so will lessen the labours of our Swiss
by enrolling themselves as members at the
possible date.

IONS AND PHASES.[1]

E titles of the half-dozen books under notice clearly afford evidence of the physical trend of chemistry at the present moment. But r valuable an aid physical chemistry, with new conceptions it is bringing us, is to the ed worker, it is impossible to help feeling e time is not yet come to give up, as Prof. d would wish, all our cherished and long- hed conceptions. And it seems a great e to teach chemistry from the very begin- a purely ionic basis such as Prof. Jones es: more especially as by far the major ion of students in any elementary chemistry this country do not subsequently intend to ne chemical profession.

is preface Prof. Jones claims that the state elopment of any natural science can be ed by the extent to which mathematical ls have been applied to it: but the chemist irly ask him in return whether ions or natical conceptions will bring us any nearer thesis of protoplasm—there is not a word hematics throughout Fischer's wonderful es in the sugar group, one of the greatest ments of modern chemistry. At the same time we do agree with Prof. Jones that a closer connection between mathematics and chemistry is to be encouraged in every way. Unfortunately, at the moment, there is a great tendency for physical chemists to go ahead of the experimental facts and to lose the sense of proportion and chemical feeling.

The "Principles of Inorganic Chemistry" is based entirely on ionic conceptions, and in the worship of the ions the chemical properties of the elements and their compounds have often suffered; is it not somewhat alarming to read that "consumed in large quantities copper ions are poisonous; or that "Kainite is used to enrich the soil in potassium ions, which are so much needed by many plants"; "sodium nitrate forms a solution of NO_3 ions, which are taken up by plants and are among the most valuable fertilising agents"; or, again, that "mercuric chloride furnishes a convenient means of obtaining mercuric ions, which are very poisonous to most forms of life"? The intelligent student of this book can well be pictured attempting to buy materialised ions at the local chemist's shop.

Throughout, the generalisation comes first and the facts are fitted to it, so that the student is not led to think constructively: thus we read that were it not for the periodic system we should never think of dealing with the elements copper, silver and gold in the same connection as sodium and potassium. Surely the relationships existing between these elements were established first and the periodic system subsequently based on their recognition.

Prof. Jones's smaller book is designed for the beginner and contains a number of directions for practical work: it is substantially, however, a series of extracts from the larger manual.

Prof. Walker's "Introduction to Physical Chemistry" is so well known that it is only necessary to express satisfaction at its being brought up to date in a third edition; it gives a clear and concise, though necessarily somewhat condensed statement of the subject of physical chemistry and should be read by all students of chemistry. The author has throughout avoided the use of any but the most elementary mathematics, so that the work is intelligible to all.

Prof. Young's "Fractional Distillation" appeals to the advanced worker in the laboratory: he has written an eminently practical treatise on the subject which cannot fail to be of considerable value. The apparatus for and methods of carrying out a distillation are dealt with at length and the theoretical aspect of the subject is fully considered. The description and comparison of the efficiency of the various forms of still-head is of especial importance, whilst not only are many actual examples given, mostly from Prof. Young's own work, but the book also contains much unpublished work.

We have been much interested in reading Dr. Findlay's "Phase Rule," which marks a great advance on all previous treatises on this latest branch of physical chemistry, presenting the

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[1] iples of Inorganic Chemistry." Prof. H. C. Jones. xx. + 521 pp. n.) 17s.
nts of Inorganic Chemistry." Prof. H. C. Jones. ix. + 343 pp. n.) 6s. 6d.
uction to Physical Chemistry." Prof. James Walker, F.R.S. pp. (Macmillan.) 10s.
onal Distillation." Prof. S. Young, F.R.S. xii. + 284 pp. n.) 8s. 6d.
Phase Rule and Its Application." Dr. Alex. Findlay. lxiv. + Longmans.) 5s.
uction to the Study of Physical Chemistry." Sir William K.C.B., F.R.S. 48 pp. (Longmans.) 1s. net.

subject in what is really a readable form. As the author points out, an acquaintance with the principles of the phase rule is becoming increasingly important to the student of metallurgy and geology and it is all important that an attempt should be made to present the subject in such a way as to appeal to this class: we fear, however, that the sections on alloys, though of necessity brief, are not yet in the form to be easily assimilated by such students.

We are glad to see that in his preface Dr. Findlay gives due credit to the important work of Van't Hoff in this field; because, however much credit is due to Roozeboom for the revelation of the principle embedded in Willard Gibbs's phase rule, it must not be forgotten that the whole subject was originally worked out by Van't Hoff, stage by stage, without the use of any rule at all. It is a question whether there is not a danger at the present moment of too much emphasis being laid on the importance of the phase rule. However important it may be as the basis of classification of different cases of chemical equilibrium and as a guide to the arrangement of the results obtained in the investigation of unknown systems, it does not allow of a forecast being made beforehand as to what is likely to happen in any particular system, and so, for example, play the part which the periodic arrangement of the elements did for Germanium. In practice, the determination of the number of forms stable under the conditions of experiment often gives rise to considerable difficulty: it must not be forgotten that the problem can only be solved experimentally.

The book is well illustrated and frequent references are given to the original work on the subject. It forms the first of a series of Text Books of Physical Chemistry to be edited by Sir William Ramsay, who has written a brief introduction pointing out the main lines along which the development of physical chemistry has proceeded.

THE PHILOSOPHY OF EDUCATION.[1]

THIS weighty book from an American professor is a series of lectures expanded. It considers education under biological, physiological, sociological, psychological, and philosophical aspects. It contains short bibliographies, and is full of apposite quotations and illuminating remarks. It is entirely religious, we might say Christian, in tone, and for this very reason will be welcomed by large numbers of teachers and looked on with suspicion by many critics.

Dr. Thorne seems to lament that there is no unanimity in our conception of education, but himself adds that "education does not exist except as a concept of the mind: we should speak of persons to be educated."

His order of lectures is surely the right one—body, mind, soul; but the immense importance of health is not fully recognised, and he speaks nowhere of the value which would be gained if teachers could regularly study for medicine, or if advisory boards of doctors and teachers could be allowed to issue broadcast the plainest and simplest advice to schools and homes.

In regard to games he is optimistic, and he claims for America that it is there "considered better to lose fairly than to win unfairly." By the side of this we may put President Eliot's comment on Harvard football: "The martial axiom—attack the enemies' weakest point—inevitably leads to a deliberate onslaught on the cripple or the convalescent in the opposing line; and the habitual violation of rules, if penalties be escaped, is regarded by many as merely amusing" (Mosely Report, p. 16, note). President Eliot is so often quoted in Dr. Thorne's book that we add this indictment.

The writer regards religion under the head of Art, and defends the reading of the Bible without comment. He does not say how far even this reading has been given up in his own country, and in this part of his book he appears to be writing timidly.

A common-sense addition to the Herbartian theory of interest occurs in his psychological chapters. Effort, he says, is worth more than interest. "Form the habit of doing something disagreeable every day."

The whole book is full of idealism, and it is refreshing reading. It does not add to our knowledge of what education for all ought to be, but it does encourage the teacher who tries to find out what education for the units ought to be.

It contains the usual assumption that we and the nineteenth century are the only people who have studied these questions, and it girds at mediaeval notions regarding physical education, while, as a matter of fact, we are only slowly arriving at the mediaeval notion—which was that every boy ought to become a man. According to modern critics, in America boys are in danger of becoming women.

THE WORK OF THE SCHOOL BOARD FOR LONDON.[1]

THE School Board for London has ceased to exist, but London will continue for many years to benefit by the good work accomplished during the thirty-four years of its existence. The members of the Board held their last meeting on April

1 "The Philosophy of Education." By H. H. Thorne. i. + 295 pp. (Macmillan.) 7s. 6d.

1 "Final Report of the School Board for London, 1870-1904. With the Valedictory Address of the Right Hon. Lord Reay, Chairman of the Board." xxiv. + 378 pp. (King.)

addition, there were present, at the invitation of the large number of members of previous Boards, members ndon Education Committee, Board-school managers, officials, and others interested in educational Numerous votes of thanks, including those to the the Board, the teachers, honorary members of sub-committees, honorary school managers, chairmen of s, the vice-chairman, and the chairman, were agreed nthusiasm and suitably acknowledged. Then the delivered his valedictory address, and the School London passed out of existence to the singing of e the King."

airman's concluding address and the final report of together provide the student of education with all the ecessary to estimate the great educational progress in polis since 1870. All that can be done here is to few important subjects as an indication of the inter-terial to be found in the useful volume before us.

cative of the immensity of the problem with which the chool Board has been concerned, Lord Reay stated that the population of London has grown from 3,261,000 000 in 1901, a total increase of 1,275,000 persons. ase of the population of London during the period l is greater than the combined populations of Man-d Liverpool in 1901. It would be necessary to add the population of Darlington to establish an equi-Or, to put it in another way, the number of inhabited London has grown from 418,802 in 1871 to 574,346 in increase of 155,544. The total number of inhabited Liverpool in 1901 was only 123,469. Still more re-is the increase in the rateable value of the metropolis. it was nearly £20,000,000, in 1903 it was nearly 000. Thus, though the population and inhabited ve increased by 28 per cent., the ratable value has 50 per cent.

g to the progress made since 1870 in the educational of the elementary schools of the Board, Lord Reay ch of the progress that has been made is doubtless le to the wise policy adopted by the Board of leaving nount of discretion to the head teacher of each depart-fixing the curriculum. This policy has encouraged it, has utilised the special knowledge of various o the greatest extent, and has enabled them to adapt ulum to local requirements. Much of that progress is o the high ideal set before the Board and the public ommittee appointed by the first Board to consider n, of which Prof. Huxley was the chairman. In the that committee the following subjects were stated to ial: the Bible and the principles of religion and reading, writing, arithmetic, English grammar and on, book-keeping in the senior schools, and mensura-senior boys' schools, systematised object lessons, in the six school years a course of elementary instruc-hysical science; the history of England, elementary , elementary social economy, elementary drawing, d drill, plain needlework and cutting-out in girls' nts. The discretionary subjects were: domestic algebra and geometry. How far the scheme was approach to realisation may be measured by the fact e year ended December, 1873, the numbers of chil-earned grants in specific subjects were as follows: , 150; grammar, 70; history, 42; algebra, 6; and ysiology, 2. In 1876 the number of children earning specific subjects had risen to 3,381, and in 1903 the eceiving instruction in "optional" subjects was

rious feature in the history of English education has light value which has been attached to the teaching of English. Although the "Code" of the Education Department before 1900 dealt in a meagre and spasmodic manner with this important subject, neither the Department nor the Board seem to have considered that a full command of their own language, such as is obtained in the elementary schools of the United States, Germany, and France, ought to be acquired by all children before leaving school. The "Code" of 1900 assigned to English its proper place in the curriculum, and it is to be hoped that we shall emulate the Americans in the attention they bestow on this subject.

Another of the causes of the improvement in the education of the children has been the greater regularity of attendance. In 1871, when it may be assumed that only those children were in school whose parents were anxious to have them educated, the percentage stood at 78·3; but this percentage was not again reached until 1877. In 1881 the percentage of average attendance had risen to 79·7, but it was not until the year 1895 that so high a percentage was again reached. In the following year it was 80·4, and there was no very great improvement until 1899, when the percentage was 81·2. But in 1901 the percentage had risen to 82·4, and from that time each year has shown an improvement; the percentage for 1902-3 being 85·6. The figures for 1903-4 will in all probability show a further improvement of 1·6 per cent., making a percentage of 87·2.

It appears to be undoubted that the number of children who needed educational provision when the Board commenced work in 1870 was at least a quarter of a million, although the Board did not at first recognise the full extent of the deficiency. From that time up to the present the Board has provided 559,667 places in permanent schools, and a large number of school places are projected. There are now 475 permanent schools.

The total expenditure incurred up to September, 1903, upon the purchase of 531 sites, amounts to £3,832,818, together with a sum of £522,192 for costs. The total area of these sites is 493 acres. The expenditure for building day schools has been rather more than £14,000,000. The cost of maintenance per child has steadily grown. In 1890 the average annual gross cost was £3 8s. 8d. per child, and the net cost £2 1s. 8d. In 1903 these figures stood at £4 2s. 9d., and £3 2s. respectively. The most serious item in this cost is the salaries of the teachers. This has grown from £2 10s. 6d. per child in 1890 to £3 14s. 8d. in 1903. The difficult question of the scale of teachers' salaries is one from which the Board has rarely been free.

"We transfer," said Lord Reay, towards the end of his address, "to the new Education Authority an administration which has grown to its present dimensions concurrently with the expansion of the metropolis. We place at their disposal a staff of experienced officials, some of whom have grown grey in our service, all of whom have served us with zeal. We transfer a large staff of teachers, to whose exertions the efficiency of the schools is mainly due, and London has every reason to appreciate the devotion with which they discharge their duties, often under many discouragements and difficulties. The organisation of elementary education in London is very superior to that of secondary and higher education, for which much remains to be done. The rate of progress since the Act of 1870 came into operation has been very marked. The rate of progress during the next thirty years cannot be the same, but I have no doubt that we shall witness further progress, and that the children will leave school always better equipped for the battle of life."

In conclusion the Chairman said: "Our prosperity depends to a large extent on the training given to the children, who are the heirs of that vast inheritance transmitted to us by the energy of our ancestors, which will require all the sagacity of future generations to maintain and to develop, and upon which we invoke God's blessing.

THE NEW ELEMENTARY SCHOOL CODE.

THE Board of Education is to be congratulated on the greatly simplified form of the "Code of Regulations for Public Elementary Schools" for 1904. It is sincerely to be hoped, but scarcely to be expected, that, as urged in the prefatory memorandum, the Code in its new form may be read and understood by the general public, especially by the parents of the children attending the elementary schools.

The Code recognises more fully than ever before that the chief function of the elementary school is to prepare children to perform with intelligence and honesty the duties of mature life. It rightly emphasises the fact that the teacher's object is most likely to be attained by developing naturally as many as possible of the faculties of the children; and insists that this development is best encouraged, not by an inordinate appeal to the verbal memory, as in former years when snippets of miscellaneous information were learnt by heart, but rather by encouraging the children to think for themselves, to exercise their own immature powers, and to learn by doing.

These conclusions are arrived at by a study of the first chapter of the Code, with its single page of subjects, with its absence of detailed syllabuses of work for different standards, and a comparison of this simple, yet truly educational, scheme with the detailed schedules of former years. For the future it will be possible for each school to develop on its own individual lines; each head teacher will be able so to mould the instruction that local needs are met. In fact, it is now reasonable to suppose that the majority of our boys and girls will leave school not with a distaste for knowledge and a hatred of books, but with a desire continually to add to their mental equipment. To a love for good literature they will add an open-eyed interest in natural phenomena and a power of intelligent observation on scientific lines—resources of a pure kind which will ensure a healthy and virtuous use of their leisure hours.

We commend the introduction to the Code to all who are concerned with elementary education, whether as teachers or administrators, for it sets forth in the clearest language the ideal to be striven after by all primary schools. The following extracts will show that rigid uniformity and mechanical methods are to be discouraged, and that training is in the future to take the place of cramming:—

"The purpose of the public elementary school is to form and strengthen the character and to develop the intelligence of the children entrusted to it, and to make the best use of the school years available in assisting both girls and boys, according to their different needs, to fit themselves, practically as well as intellectually, for the work of life.

"With this purpose in view it will be the aim of the school to train the children carefully in habits of observation and clear reasoning, so that they may gain an intelligent acquaintance with some of the facts and laws of nature; to arouse in them a living interest in the ideals and achievements of mankind, and to bring them to some familiarity with the literature and history of their own country; to give them some power over language as an instrument of thought and expression, and, while making them conscious of the limitations of their knowledge, to develop in them such a taste for good reading and thoughtful study as will enable them to increase that knowledge in after years by their own efforts.

"The school must, at the same time, encourage to the utmost ... natural activities of hand and eye by suitable ... manual instruction; and afford them ... development of their bodies, ... exercises and encouraging them in organised games, but also by instructing them in the working of some of the simpler laws of health."

"And, though their opportunities are but brief, the teachers can yet do much to lay the foundations of conduct. They can endeavour, by example and influence, aided by the sense of discipline which should pervade the school, to implant in the children habits of industry, self control, and courageous perseverance in the face of difficulties; they can teach them to reverence what is noble, to be ready for self-sacrifice, and to strive their utmost after purity and truth; they can foster a strong respect for duty, and that consideration and respect for others which must be the foundation of unselfishness and the true basis of all good manners; while the corporate life of the school, especially in the playground, should develop the instinct for fair play and for loyalty to one another which is the germ of a wider sense of honour in later life."

Recent codes have contained a list of subjects which, as a rule, *must* be taught in all elementary schools, and a longer list of subjects which *may* be taught in appropriate circumstances. The Board of Education has this year emphasised the essential character of a curriculum as a discipline or means of education, and exhibited the course of instruction as a connected whole; and indicated the scope of the instruction to be given. The new Code states that the education given in every primary school should be based on a graduated course in the following subjects: the English language, arithmetic, knowledge of common phenomena of the external world, geography, history, drawing, singing, physical exercises, and plain needlework for girls. The first six subjects should be taught in relation to each other and with reference to the surroundings of the children.

THE EDUCATION BILL FOR SCOTLAND.

THE introduction of the new Education Bill marks a ... tant epoch in the history of Scottish education. ... measure Mr. Graham Murray has put the crown and ... the great work of his predecessor, Lord Balfour, in ... education. The long postponement of this reform ... all, proved a blessing in disguise, as it has resulted in ... universal agreement as to the main lines such a re... take, and of which the present Bill is the practi... However well school boards have discharged th... the past, it has for a considerable time been recog... had reached the limits of their usefulness, and ... development was impossible under their auspi... itself, and its enthusiastic reception in the cou... be claimed as a tribute to the national goo... matter of education. Political and sectarian p... running deep and strong, have been by c... rigidly excluded from the consideration of edu... which are examined solely from the stand... needs.

Unity of management of all grades of ed... extended areas may justly be regarded as ... the Bill, and the resultant benefits from ... principle alone would be sufficient to justi... with which the Bill has been received. ... can now be made for secondary and ... every educational area, and the incidenc... fall on the whole community sharing ... fusion and overlapping that have long ... secondary education will now cease, a... is established a real organic unity be... and kinds of education which have ... enclosed in water-tight compartmen... another.

whole nation is deeply indebted to Mr. Graham Murray allising in such an admirable manner the hopes and ns of all interested in education, and for producing a which, while initiating a great forward movement, s all that is best and most distinctive in the present nal system.

hief provisions of the measure are given in the following :

STITUTION AND ELECTION OF SCHOOL BOARDS.

a) The new educational areas shall be the "districts" ies as constituted in terms of the Local Government 889.

In the case of the smaller counties not so divided, the county shall constitute the educational area.

Edinburgh (including Leith), Glasgow (including), Dundee and Aberdeen shall form separate educa- areas. All other burghs are to be merged in the sur- ng county districts.

r each educational area there is to be a school board *ad hoc*, which shall have control of all grades and education.

e new school boards are to be elected on the county h council franchise, and on the same day and in the :e as the elections for these bodies.

POWERS OF SCHOOL BOARDS.

ere shall be established by each school board a fund," to which shall be carried all sums received iamentary grants, and from the Education (Scotland) raised by way of loans, or otherwise received for al purposes.

e deficiency between the school fund and the expen- .ll be met by means of a local rate within the education

e school boards are empowered to use the school fund g out the following objects :—

n providing, under their own direction or through :rs, any form of education or instruction which may me to time be sanctioned by any code or minute of the ment, and in providing for the physical training and .on of the pupils attending schools within their educa- strict, and for their medical examination and super-

n paying, either separately or in combination with chool boards, the salaries of visiting teachers giving ion in several schools in turn, or of superintendents ganisers of technical or other special forms of educa-

n granting pecuniary aid upon such conditions as they om time to time prescribe to schools and institutions ler their charge, where such schools or institutions are sed by the Department as supplying efficient educa-

In establishing bursaries of such amount as they may n time to time, to be open to pupils attending schools their district, whether such schools are under their or not, and to be tenable at schools or institutions ised in terms of this Act as supplying efficient higher ion, or at a university.

In bringing opportunities for education within easier of children in outlying parts of their district, whether by ling vehicles, paying travelling expenses for teachers or en, or otherwise, whenever the school board shall con- such special provision or expenditure required by the nstances of their district or of any part thereof.

) In paying pensions or retiring allowances to teachers ir employment who were certificated teachers before the encement of the Elementary School Teachers (Super- annuation) Act, 1898, irrespective of whether such teachers have accepted the said Act or not, and anything in the said Act to the contrary notwithstanding.

(4) The school board shall commit the management of each school under their charge to a set of managers, one-third of whom shall be appointed by the school board, and two-thirds by the parish or burgh council.

(5) The duties of such managers shall be determined by the school boards, but shall not include the borrowing or raising of money, the incurring of capital expenditure, or the dismissing of teachers.

EDUCATION (SCOTLAND) FUND.

(1) A fund, consisting of all moneys, other than the annual parliamentary grants, at present separately paid to Scotland from Imperial sources, shall be established and administered by the Scotch Education Department.

(2) This fund shall be applied to the following objects in the order specified :

(*a*) To defraying the cost of the inspection and examination of secondary schools, the cost of the leaving certificate examination, and of such medical examination or supervision as the Department may deem necessary.

(*b*) To establishing and maintaining a central fund from which the department shall make grants in aid of the capital expenditure on new institutions for technical education.

(*c*) To making special grants for :

(1) Technical institutions and secondary schools.

(2) Subsidising the bursary schemes established by school boards.

(3) Aiding the provision of a sufficient staff of teachers in public schools.

(4) Meeting the extra expenditure in poor and sparsely populated districts.

(*d*) To distributing, after satisfying the foregoing purposes, the balance of the fund to schools in receipt of parliamentary grants, and in proportion to the average attendance of the scholars in such schools.

PROVINCIAL COUNCILS.

(1) Four provincial councils shall be established and meet at Edinburgh, Glasgow, Aberdeen and Inverness.

(2) The members shall include representatives of the county councils, school boards, universities, and teachers.

(3) The function of these councils will be to advise the Department on matters referred to them, and to approach the Department on any question affecting the educational interest of the province.

THE SECOND READING.

The second reading of the new Bill admirably illustrated the contrast between an English and Scottish debate on education. This difference was epigrammatically put by Mr. Bryce, who said that in the one case they had "passion without progress," and in the other case "dulness without discord." But though the debate was certainly not vivacious, it was by no means tedious, but rather intensely practical and earnest. While there was almost universal agreement with the broad lines of the measure, there was great variety of opinion in regard to details, and it may safely be assumed that its passage through committee will be decidedly livelier than during the first two stages. One of the most striking features of the debate was the attack by members from both sides of the House upon the excessive and yearly increasing despotism of the Education Department. "We have been too much under the thumb of the Department," said Sir Mark Stewart, and this sentiment was re-echoed by speaker after speaker. Mr. Haldane said that the Bill retained in an aggravated form all the authority which the Department had year by year arrogated to itself, and he hoped that when the Bill came to the committee stage

greatly increased powers would be given to the school boards at the expense of the Department. There can be no doubt that the Department during the past two or three years has, by its irritating and incessant interferences on matters of the smallest details, alienated the sympathy of all public bodies that have had dealings with it, and the outburst during the second reading proves the existence of a feeling which may go even too far in curbing the powers of the Department.

The appointment of managers also gave rise to a good deal of controversy, and the general opinion was that managers were an incongruity in a body specially elected to deal with education. If managers were to have real powers, they lessened the influence and importance of the school board itself; if they were to have no real power, they were superfluous and multiplied labour without any corresponding advantage.

A good deal of the discussion had relation to the proposed establishment of four provincial councils. The principle of these councils was generally approved, but the feeling was general that one National Council would be much more effective as an exponent of Scottish educational opinion. Mr. Graham Murray gave scant encouragement to the idea of a National Council whose influence might some day completely overshadow that of the Department. Members, however, may be trusted to accept the four councils offered as giving promise of something better at a future date.

Fault was also found with the area which Mr. Graham Murray has adopted for his Bill, one considering it too large, and several considering it too small. The Secretary for Scotland had a good deal of sympathy with the latter, and indicated that he would not be unwilling to combine districts if a reasonable case could be made out for so doing. Notwithstanding all these differences of opinion, general expression was given to the feeling that the Bill was a good one even as it stood, and the hope is universal that the Government may be preserved in power till it has passed.

POINTS OF VIEW.

IN these days scientific training is an indispensable condition of success in commercial and industrial life. To be thoroughly effective it requires all the help which research and modern appliances can give. You are therefore wise in providing improved equipment and widened opportunity for instruction, which this college will henceforth supply. You have told me that the efforts of your department to extend scientific education amongst the people have been supported by public sympathy, and by the co-operation of representative popular bodies. I am glad to receive this assurance, for without such sympathy and co-operation any scheme of technical instruction, however well devised, must fail to come into close touch with the life of the people, and must fall short of complete success. I agree with you in thinking that a complete system of education is necessary for the full realisation of your aims, and my best wishes go with your efforts to improve the intellectual and material condition of the country.—THE KING at the laying of the first stone of the Royal College of Science for Ireland.

APTITUDE at school does not necessarily point to success in after-life, which, in most callings, depends more on nerve, energy, temper, than on mere brain-power. Everybody knows doctors and lawyers of the highest ability and learning who yet fail to secure clients. And dulness at school does not necessarily point to failure in after-life, for the same reasons, and also because a boy may have hobbies which are not indicated in his school-life, and again because the stress and urgency of a man's business and the pride of earning money have a great influence on the faculties. The "good boy" may be merely docile, timid, obedient; the "bad boy" may be listless or even defiant because his interest is not aroused.—The Rev. Dr. GOW in the *Parents' Review*, May, 1904.

THE idea that a given sum will build and equip a laboratory, and that once set going it will run itself and require nothing more than occasional small sums to replace loss by breakage and the like, is a pernicious fallacy. New methods, requiring new or improved instruments, appear each year, and these instruments must be had, if there is to be any pushing forward into the unknown in the branch to which they are adapted. It is a noteworthy fact that, crude as the materials of the early experimenters were, they were the best for their purpose to be had in the world of that time. Faraday insulated his wires with bits of string and old calico, but no one had better insulated wire. Davy obtained sodium and potassium by electrolysis, but he had the biggest and best galvanic battery in existence at the time. It would have been practically impossible to discover Hertzian waves, or Röntgen rays, or wireless telegraphy without the best of induction coils. And so we might continue *ad infinitum*.—Prof. S. L. BIGELOW at the dedication of Palmer Hall, Colorado College, U.S.A. From *Science*, April 22nd, 1904.

I MAINTAIN that the one supreme gift that the good school can give its pupil is a lifelong love for the best books. School should engender in its pupils a love for all that is good and beautiful and true. Humanity has banked nearly all its good and true and many of its beautiful deeds in books, so that the school that cannot lead its children to this bank disinherits them. How can children know the nobility and grandeur of which humanity is capable if they love not books? To deny them books is to deny them ideals—it is, indeed, to slam the gates of heaven in their faces.—Mr. R. E. HUGHES in "The Development of Power in School Work" (Arnold: Leeds).

HISTORY AND CURRENT EVENTS.

IN the agreements between Great Britain and France which were announced in the middle of April, we find a good opportunity for making the study of history interesting to our scholars in both senses of that ambiguous word. Our practical every-day interests have been much advanced by this treaty between the two Western Powers which are respectively the allies of the two Far Eastern belligerents. The maintenance of the peace of the world is made more secure by this evidence of the desire of the two Atlantic powers to limit the Russo-Japanese war to the Pacific and its western coasts. But a first glance at the contents of the treaties suggests one obvious reflection. What would the framers of the Treaty of Utrecht have said if they had been told that the question of Newfoundland fisheries could have any possible connection with the Empire of Japan? The wars of the eighteenth century began in the Atlantic; only after fifty years or more was even India involved. And now, so much has the world grown that there is scarcely a quarter of the globe that does not find mention in the recent treaty or at least is not thought of by the framers thereof.

THE agreement will also make some of our history teaching more interesting in the ordinary sense of the word. How it makes the Treaty of Utrecht a reality when we find that Article 13 is only now abolished after nearly two hundred years of friction! Some parts of that treaty are still valid. Not only the possession of Newfoundland itself and other North American

but the recognition by France of the "Protestant
1" in Great Britain, date from Utrecht, though the
of the present French Republic even dreaming of re-
ie Stuarts excites a smile. And still more old-world-
out of date are those clauses of the Brito-Spanish
Utrecht by which we gained the right to import
ito South America as slaves. The work of Clarkson and
:ce has made that kind of agreement absolutely im-
and the country which knighted John Hawkins for
ing the traffic now at least professes (and does much to
its profession) to be opposed to all slavery, at least in
sense of the word.

: agreement about North Africa we are concerned
ith modern affairs. Yet for a moment our thoughts
o ancient times. Not to speak of Egypt in the pre-
ays when it figured as a rival to Babylon, or was later
of a Greek kingdom, the mention of Morocco and
minds us of the Roman Empire and its province of
' of Jugurtha and Cleopatra, and then of its conquest
llowers of Mohammed on their westward course till
e checked on the plains of Tours. Morocco is to
er French influence because of her interests in Algeria,
enth-century conquest, and in return France will lead
n acknowledging what has long been a notorious fact,
ly predominant interest of Great Britain in Egypt.
l disappear, in time, not only the dual control which
1875 over then bankrupt Egypt, and practically ended
hen France refused to join us against Arabi, but also
pean commission which Great Britain has so far, at
inally, obeyed. To whom does Egypt belong? is a
tion in international politics, with which might also be
he question, Who is the owner of Cyprus?

only last year that Sweden finally lost the last remains
ice extensive territories on the east and south of the
In the Middle Ages she owned Finland, the territory
tends northwards from St. Petersburg, and this was
ill 1815. In the Thirty Years War of the seventeenth
ie increased her territory south of the Gulf of Finland,
accessions were lost by Charles XII. to his rival, Peter
of Russia, who was seeking a seaboard for Muscovy.
German territory which Gustav Adolf won by his
ship of the Protestant cause remained for another
1 Swedish hands. Not till the great re-arrangement of
was Swedish Pomerania finally ceded to the Prussian
In 1803, the port of Wismar, the former Hanse town
weden had gained in the seventeenth century, was
o Mecklenburg-Schwerin "for about £60,000 with the
edemption at the end of either one or two centuries on
of the loan with accumulated interest." But last year,
sideration of the estimates, it was decided to forgo this
redemption, and Sweden then finally abandoned the
the Grand Duke. Thus, almost unnoticed, passed
: share of the Swedish kings in the German Empire.

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nual of the Science of Laundry Work. By Margaret
tin. 140 pp. (Blackie.) 1*s.* 6*d.*—This book takes
h chemical knowledge for granted on the part of the
) be of much service to ordinary students in laundry
On page 14, for example, we find chemical formulæ of
bicarbonate, ammonium oxalate, and other compounds
thout previous explanation. At the same time there is a
l of information in the book concerning the materials used
ry work, and this should be of assistance to teachers of
ect. The book is attractively printed, and contains help-
rations.

ITEMS OF INTEREST.

GENERAL.

THE President of the Board of Education has appointed a Departmental Committee to inquire into the present working of the Royal College of Science, including the School of Mines, to consider in what manner the staff, together with the buildings and appliances now in occupation or in course of construction, may be utilised to the fullest extent for the promotion of higher scientific studies in connection with the work of existing or projected institutions for instruction of the same character in the metropolis or elsewhere, and to report on any changes which may be desirable in order to carry out such recommendations as they may make. Sir Francis Mowatt is chairman of the committee; and Mr. J. C. G. Sykes, assistant secretary in the branch of the board which deals with evening schools, technology, and higher education in science and art, has been appointed secretary to the committee. The London County Council is represented on the committee.

THE third report of the Mathematical Pass Examinations Syndicate appointed by the University of Cambridge has now been published. At present Part I. of the examination consists of three papers on the subjects of (i.) algebra, (ii.) geometrical conic sections and Euclid xi. 1-21, with easy exercises on the geometry of Euclid, and (iii.) analytical geometry, which is optional. The Syndicate considers that geometrical conic sections may with advantage be omitted from the obligatory part of the examination, and that the paper on analytical geometry should be taken by all candidates. The recommendations of the Syndicate place analytical geometry in the second part of the examination, and transfer trigonometry and mechanics to Part I., in which part it is proposed to retain the elements of solid geometry, which will thus, with algebra, trigonometry, and mechanics, constitute the obligatory subjects. The Syndicate recommends, too, that plane geometry shall form the subject of the voluntary paper. The voluntary paper in Part II. shall, it is proposed, include easy exercises on integration with simple applications.

THE recommendations of the Syndicate may be summarised as follows:—PART I. to consist of four papers: (1) Elementary algebra up to and including permutations, combinations, the binomial theorem, logarithms (including actual use of tables), and the exponential theorem; (2) Elementary solid geometry, dealing with the line, plane and sphere; elementary trigonometry, including solutions of triangles by logarithmic tables; (3) Elementary mechanics (statics and dynamics); (4) Plane geometry, including harmonic ranges and pencils, properties of circles, simple properties of conic sections, orthogonal projection, inversion, reciprocation. PART II. to consist of three papers:—(1) Analytical geometry; (2) Elementary optics and astronomy, viz., explanation of phenomena, construction and use of the more simple instruments; (3) Elements of the differential and integral calculus. Paper (iv.) in Part I. and Paper (iii.) in Part II. to be voluntary, that is to say, students shall not be required to present themselves for them, but the results shall be taken into account in assigning the places in the class list; and marks shall be fixed to the names of those who pass satisfactorily in these papers.

AT the recent annual meeting of the Froebel Society, Prof. M. E. Sadler, president-elect of the society for the ensuing year, delivered an address on Froebel and the place of industrial training in education. He said that in the early training of children, Froebel, following the conclusions of many great

thinkers on education before his time, held that handwork should find a serious place; but he was far from limiting the application of this principle to the early stages of education. In our elementary schools, however, said Prof. Sadler, the classes for little children are far too large, and at any expense that defect must be altered. We are also lamentably deficient in a thorough and stimulating secondary education for boys and girls in day schools at fees which are within the reach of parents of small means. And, thirdly, we need to strengthen far more all our institutions for research and higher education. Prof. Sadler described an educational experiment which is being tried in Liverpool. A house has been taken to which girls, after leaving the elementary schools, go for a course of technical instruction in domestic science. The subjects taught are cookery, laundry work, household sewing, home dress-making and millinery, hygiene, and housewifery. As the teachers live in the house and the girls keep it in order and cook their own dinners, the instruction is thoroughly practical. Prof. Sadler suggested that an experiment might be tried of a higher elementary school, with a curriculum of which one-third should be devoted to manual and physical training, and expressed the hope that the authorities at one of our great public schools may see their way to try the experiment of arranging for some of the boys a course of instruction which shall include a suitable amount of skilful graded handwork.

DR. LLOYD SNAPE, director of education to the Lancashire County Council, deals in his recent report on education other than elementary within the administrative county of Lancaster, with the position of assistant-masters in secondary schools. He suggests that in the balance-sheet of every public secondary school the salaries paid to each of the assistant-masters should be shown. It is well known that the educational work performed in many secondary schools, especially the smaller grammar-schools, has been greatly impaired by the fact that inefficient and inadequately trained assistant-teachers have been employed. That an unskilled band of workers is so often found on the teaching staff of secondary schools is mainly due to the small salaries offered, and the uncertain tenure of the position of an assistant-teacher. Dr. Snape recommends: (1) That a definite scale of salaries be adopted for teachers in secondary schools, as has already been done for teachers in elementary schools, and that the governors or other managers of public secondary schools who may seek recognition by the County Committee be required to pay their assistants in accordance with the scale. (2) That the appointment or the dismissal of an assistant be made by the governors of the school, after first receiving and considering the recommendations of the head-master, and that an assistant whom it is proposed to dismiss should be permitted personally to lay his case before the governors.

THE Private Schools Association continues to show signs of its increasing activity. In addition to its successful conference held at Oxford last month, there is the evidence provided by its recently published "Year-Book" for 1904. At the present time there are 1,520 members of the Association, no fewer than 726 having been elected in the course of the year. The increase in the number of sections and branches has kept pace with the increase of membership, and these now number 48. To arrange and consider the numerous questions which come before the Council of the Association monthly for decision, five committees have been formed, and these have already lightened the work of the Council. We recommend all private schoolmasters and schoolmistresses to procure a copy of the "Year-Book," which is full of useful information. The general secretary of the Association is Mr. H. R. Beasley, 9, Bedford Court Mansions, *Bedford Square, W.C.*

THE Department of Agriculture and Technical Ins for Ireland has published a second bulletin in its "Scie Art" series. The pamphlet is written by Mr. W. J. and is entitled "The Spectrometer: its Construction, ments and Uses."

MISS WALTER is arranging this year another holi women engaged in teaching and other professional work parties of the last four summers have been successful, ar been useful to a number of ladies who could not otherwi enjoyed a continental trip. The party will start on Augu travelling *via* Dover-Calais to Switzerland, and will Wengen and Grindelwald, amidst the beautiful scenery Bernese Oberland, returning *via* Interlaken, Lucerne an The time occupied will be a fortnight, and the cost ab guineas, inclusive of board and lodging at comfortable and second-class travelling. Those wishing to do prolong their stay, as the tickets will be available for 2 Early application should be made by those desiring to j party, as, owing to the crowded state of Swiss hotels in su arrangements have to be made well in advance. Furt formation may be obtained from Miss Walter, 38, Woo Grove, Finsbury Park, London, N. It should be noted t trip is in no sense a commercial enterprise, Miss Walter's being merely to enable those who could not go alone to by the economies which can be effected by travelling party.

WITH a view to prevent the increasing loss of life an perty owing to children playing with matches and with t British Fire Prevention Committee through a generous d from a Canadian member, offer the Committee's gold me a purse of £20 for the best fable for children calculated as a warning against the danger of playing with matches The competition for this prize is open to British subjects res any part of His Majesty's dominions, and elementary teachers are particularly invited to compete. The execu the committee will act as judges, and will be assisted by schoolmaster, an elementary schoolmaster, and a schoolm as assessors. Two silver and four bronze medals will given as additional awards for meritorious essays. Th ditions can be obtained at the Committee's offices, 1, W Place, London, S.W., upon application *by letter* only, en a stamped addressed envelope.

THE President of the Board of Education has appoin Francis Fleming and Mr. Sidney Wells, principal of the sea Polytechnic, to be members of the Teachers' Regi Council in the place of the Rev. Dr. W. A. Fearon a James F. Hope, M.P., resigned.

THE Council of the Incorporated Association of Head has nominated the Rev. Canon G. C. Bell, ex-Master o borough College and president of the association, as it sentative on the Teachers' Registration Council, in place R. P. Scott, who has been appointed a staff inspector un Board of Education.

THE chairmen and vice-chairmen of the sub-com of the London Education Committee have been appoi follows, the name of the chairman of each committe printed first: Day Schools, Mr. E. A. Cornwall and Re Lidgett. Teaching staff: Mr. W. H. Dickinson and Thesiger. Buildings and Attendance: Rev. A. W. and Mr. G. Dew. Higher Education: Mr. S. We Sir C. Elliott. Special Schools: Mr. A. Allen and Lawrence. Training of Teachers: Mr. G. Wallas an Bryant. Polytechnic and Evening Schools: Mr. E. T and Mr. E. Bayley.

DR. WILLIAM GARNETT has been appointed educational adviser to the London Education Committee.

THE Board of Education has just issued the revised list of twenty-five holiday courses which will be held on the Continent at different times during the present year, but mostly in the summer months. Five of the courses are in Germany, viz., Griefswald, Jena, Königsberg, Marburg and Neuwied; one in Austria, viz., Salzburg; three in Switzerland, viz., Geneva, Lausanne and Neuchatel; one is in Spain, viz., Santander; and the rest are in France, viz., Tours, Honfleur, Paris, Grenoble, Nancy, Besançon, St.-Servan-St.-Malo, Villerville-sur-Mer, Boulogne, Caen, Bayeux, Lisieux and Dijon. The paper issued by the Board of Education gives the date of each course, the fees, return fares from London, lowest cost of boarding, principal subjects of instruction, address of the local secretary, and other details of importance to intending students. Copies of the paper can be obtained post free on application to the Board of Education Library, St. Stephen's House, Cannon Row, Whitehall, London, S.W.

AN educational conference is to be held at Bradford in connection with the Bradford Exhibition, on June 30th and July 1st and 2nd, under the presidency of Lord Reay. Admission to the conference meetings will be free by ticket, but, as the conference will meet in one of the exhibition buildings, the usual charge (1s.) will be made for admission to the exhibition grounds. Tickets for the conference may be obtained from the Hon. Sec., Education Conference, Education Offices, Bradford. Among the subjects arranged for discussion are: "The co-ordination of the various types of schools from the administrative point of view"; "the physical condition of children and school hygiene"; "the training of literary taste and the use of the mother tongue"; "nature-study"; "the teaching of elementary mathematics"; "child-study"; "the need for nursery schools"; and "the education of girls and boys from five to twelve years of age." Addresses will be delivered by many educationists of repute, and it is expected that the conference will be both useful and interesting.

MESSRS. BREWSTER, SMITH & Co., of Cross Street, Finsbury Pavement, London, E.C., have issued a new catalogue and price list of chemical apparatus. We notice among other novelties that the catalogue gives full particulars of the special blast Bunsen burners, of the midget furnaces already described in these columns, and of the sulphuretted hydrogen apparatus of Dr. Perkin.

THE Civil Service Commissioners have announced that open competitive examinations for the following services, viz.:—The Civil Service of India; Eastern Cadetships in the Colonial Service; Clerkships (Class I.) in the Home Civil Service; will be held concurrently this year. The examinations will commence on August 1st. The limits of age for the several services are as follows, viz.:—Civil Service of India 21-23, on January 1st, 1904; Eastern Cadets 21-24, and Home Civil Service (Class I.) 22-24, on August 1st, 1904. Candidates may compete for any one or more of the services on payment of a consolidated fee of £6. The number of candidates to be selected for Eastern Cadetships is at present six. The initial salary of Eastern Cadets is £225, increasing to £300 after passing certain examinations in native languages. There is prospect of promotion to posts carrying salaries of £1,600 in Hong Kong, £1,700 in the Straits Settlements, and £2,260 in the Malay States. The numbers of vacancies in the Indian Civil and Home Civil Services are not at present announced. As regards the Home Civil Service, the practice is to fill up on the result of any particular examination: (*a*) All the vacancies in Class I. which may have been reported to the Commissioners up to the date of the announcement of the result of the examination; (*b*) any additional vacancies occurring within six months from the date of the announcement of the result of the examination which the Head of the Department may desire to have so filled. Applications for admission to attend the examination must be received by the Secretary, Civil Service Commission, Burlington Gardens, S.W., on or before July 1st.

AN open competitive examination for situations as assistant-examiner in the Patent Office will be held in London, commencing on July 19th, 1904. Not fewer than twenty-four candidates will be appointed on the result of this examination, if so many should be found to be duly qualified. The limits of age for these situations are 20 and 25. Exercises will be set in English composition (including spelling and handwriting); geometry (plane and solid); mechanics and mechanism; chemistry: electricity and magnetism; general physics, hydrostatics, heat, light and sound; and French or German (translation from the language into English). No subjects are obligatory, but candidates must obtain such an aggregate number of marks in the examination as a whole as may indicate a competent amount of general proficiency. The salary of assistant-examiners in the Patent Office is £150—£15—£450. A fee of £5 will be required from each candidate attending the examination. June 30th is the last day on which entry forms will be received by the Secretary, Civil Service Commission S.W.

SCOTTISH.

THE Education Bill has loosed the floodgates of debate over the length and breadth of Scotland. If a perfect measure is not evolved from the Government Bill it will not be for lack of counsellors, but for excess of them. The following summary includes all the main points upon which the various associations of teachers are in agreement. (1) Power should be given to combine two or more "county districts" where educational or geographical considerations render this desirable. (2) The appointment of managers should be left to the discretion of school boards. When managers are deemed necessary, a majority of such managers should be members of the school board itself. (3) The *appointment* as well as the dismissal of teachers should be retained in the hands of the school board, and not be delegated to managers. (4) All moneys granted to schools from the Education (Scotland) Fund should be allocated by the school boards. (5) Greater powers of initiative in regard to the encouragement and development of higher education should be left to the school boards. (6) The principle of advisory councils is approved, but one national council, rather than four provincial councils, is asked for. (7) The schedule of duties of these councils should be extended to include the review of all codes and minutes of the Department prior to being issued. (8) All the officials of the council or councils should be entirely independent of the Department.

PRINCIPAL STORY, on the occasion of the graduation ceremony at Glasgow University, referring to the new Education Bill, said that the nation was deeply indebted to Lord Balfour of Burleigh and Mr. Graham Murray for preserving the essential features of the Scottish educational system, and for grafting on to it provisions which would greatly extend its usefulness. He regretted, however, that the control of the courses of study was still left with the sages of the Department, and that the headquarters of the Department were still outside Scotland. The governing idea of the Bill seemed to be the bureaucratic one of controlling the schools from an official centre rather than the liberal idea of encouraging their life in the healthy freedom of self-development. He regretted also to find in the Bill no indication of the necessity for raising teachers' salaries. The teachers of Scotland were as a rule underpaid, and, considering

how much the character of the future generations depended on their work, it was a base economy which stinted them of an adequate remuneration.

HERR OTTO SALOMON, the distinguished Swedish educationist and director of the Sloyd Seminary at Nääs, who is at present on a visit to Scotland, was entertained in the E.C. Training College, Edinburgh, by a large and representative gathering of all interested in the cause of educational handwork. Dr. Morgan, principal of the training college, who presided, said that Herr Salomon had devoted his whole life to the service of education. On him had fallen in large measure the mantle of Pestalozzi, whom he strongly resembled in his educational ideals and in the indomitable and disinterested manner in which he had fought to have these ideals recognised. Herr Salomon, in his reply, expressed his gratitude for the extreme warmth of his reception on the occasion of this his first visit to Scotland. He did not advocate the teaching of handwork in schools as a preparation for any trade, but simply on educational grounds, to develop the intelligence and build up character, to teach the children to respect and love labour, and to train them in accuracy, initiative and practical judgment.

THIS year Glasgow University, following the example of the great English universities and public schools, has instituted a Commemoration Day. The Scottish universities, from their very constitution, must always be weak on the side of their social and corporate life, as compared with their English rivals. But it must be admitted that little was done in the past to keep alive such social intercourse as the circumstances would admit. Prof. Raleigh and Prof. Medley, with the hearty support of Principal Story, have done much during the past few years to redeem the university from this reproach. They have encouraged the formation of class clubs in the various faculties, and outside the university centre have formed associations of former *alumni*. In this way they have sought to keep alive the interest of the graduates in their Alma Mater. By the institution of a Commemoration Day it is hoped to provide a rallying point and meeting-place for all who honour and love the historic university. The notable success of the first meeting must be a source of keen gratification to the promoters of it.

MRS. OGILVIE GORDON delivered an exceedingly interesting address on "The Teaching of Girls" to the National Union of Women Workers on the occasion of their annual meeting in Glasgow. Mrs. Gordon, in pleading for equal educational opportunities for girls and boys, said that in the public elementary schools the girls and boys got equal advantages because they sat under the same teachers. But in the case of secondary schools the education of the boys was distinctly superior to that of the girls. From the age of thirteen the education of the boy was made pertinent to some occupation or group of occupations, but in the higher-class girls' schools there was seldom that purposeful tone and clearness of view which constituted the strength and charm of the similar school for boys. In Scotland there was pressing need for technical and commercial day-schools for girls upon the same lines as the scientific and technical institutes of London, but with special adaptation to the requirements of the several Scottish districts. Dr. Gordon has tabulated an exceedingly full list of occupations suitable for women, and advocates the formation of a central information bureau to which school girls could apply for full particulars and guidance about technical classes and trade apprenticeships. Parents wrestling with the problem, "What shall we do with our girls?" would find much guidance and help from a perusal of Mrs. Gordon's address, which is published by the Aberdeen *University Press.*

IRISH.

DURING the past few weeks there has been consi public discussion of Irish education. It may, in fact, that people in Ireland now believe in talking about edu and we may hope that the next step will be a belief in ed itself. The most important discussion of recent years o education in the House of Commons took place on the of Mr. Dale on the primary schools. One or two thing out clearly in the debate. The first was the neces abolishing the numerous boards which supervise Irish edu and establishing one central board to control schools p secondary, and technical, but how far there should b representation on such a board was a moot question. A was that the present Chief Secretary has no solution problem to suggest, and fears denominational antip Unfortunately Mr. Wyndham seems to be possessed of a for economy all round, which is the one thing inconsiste efficient educational reform. He did, however, hold out that perhaps next year the Government would atter tackle the problem. Such an attempt must be taken i with more enthusiasm than the Government showed debate.

IT is refreshing to turn to the new Royal College of S the foundation stone of which was laid by the King on I Lawn, in Dublin, on April 28th. Whatever educational is eventually introduced into Ireland, this College will re the highest technical instruction, but how it will exactl with the undiscovered parts of a plan not yet in existe one of course can say. Yet the opening ceremony tak step forward. In the words of the address read by Sir Plunkett, as representing the Department of Technical I tion, "the definite function of the College is to advanced instruction in science as applied to agricultu industry; to train teachers for technical schools, s secondary and intermediate schools in which science is and to conduct research. . . . They are striving t applied science into an intimate and helpful relationsh the agricultural and industrial life of the country. . recognise that technical instruction cannot by itself att fulfilment of its purpose. It is, therefore, our earnest ho the gracious act which your Majesty is about to perfo foster agreement on the necessity of devising a complete of education, at once acceptable to all shades of opin efficient in all its branches, no one of which can be ne without impairing the benefits conferred by others." reply the King stated that he agreed in thinking that plete system of education was necessary for the full rea of the aim; he also dwelt upon the same point in se his replies to addresses during his visit to Ireland.

IN addition to the two reports of Irish representative Mosely Commission report, a pamphlet has been publi the Department of Agriculture and Technical Inst entitled "Some Features of American Education," by Blair, Assistant Secretary in respect of Technical Instru which he sets forth his views at greater length than Mosely volume. The pamphlet of nearly 200 pages c many excellent plans and illustrations, among which refer particularly to those of the Peter Cooper High Sc New York. While much of it deals only with technical tion, there are chapters on local government and suppo schools, some features of elementary and high schools teachers and training. In his preface Mr. Blair says: ' sufficient time to general education to enable me to ap the relationship and the true proportion of technical ed to the organic whole. I saw much to admire, some th

and few to copy slavishly; but I saw and read and great deal that cannot but be of great use."

Intermediate Board has sent to heads of schools, as a nd confidential document, the report on their respective of the temporary inspectors appointed for the first six of 1903. We rather think that assistant-teachers have right to see the report on their work as heads. The these inspectors was hurried to a degree, and, so far as ell, was limited to dotting the *i*'s and crossing the *t*'s of vious reports, dealing generally with loudness and dis- of enunciation and rapidity in asking questions, and provements in the teaching of modern languages. such reports will prove valuable or not, depends on the Intermediate Commissioners are able and prepared from them the proper conclusions regarding the quality achers in their schools. If the teachers are up to the tandard, well and good; but, if not, what do the Com- rs propose to do?

WHILE inspection of intermediate schools has ceased, Ir. Dale, with another inspector from England, Mr. is on a second roving commission, this time to enquire condition of Irish secondary schools, especially the ools, the way intermediate grants are used, the qualifi- of teachers, and the relation of secondary schools to y education. The recent Intermediate Commission is ly discounted.

Margaret Stokes memorial lectures, given at Alexandra were this year delivered on May 9th, 10th, and 11th, . W. Joyce on "Education and Educators in Ancient " The titles of the three lectures were, "Two Main of Ancient Irish Schools," "School Arrangements jects of Instruction," "Irish Educators in Foreign

WELSH.

Education Act of 1902 had for its chief object the ration of elementary education by our county areas. in conception is often overlooked, but it is certainly ed and realised by educationists as an epoch-making nent in national education. Still, it is felt that in atters Wales can do better by co-operation of counties single action. Accordingly, communication is now between the Board of Education and the various local ies concerned with a view to the establishment of a Council of Education for Wales. A draft scheme has been submitted and discussed by the Welsh members ament and certain representatives of the Consultative tee of the Welsh County Councils Association. It is d that this Welsh Education Council consist of sixty s, of whom 51 shall be chosen by the various county er education authorities of Wales in certain proportions ave been suggested by a Conference of the bodies con- In addition, there are to be nine selected members, whom are to be women. These shall be "persons of ce in education."

matters to be referred to the Education Council are hose which concern the training of teachers and the ion and inspection of schools, together with such other relating to the exercise of the said powers as the com- Councils may, with the sanction of the Board of Edu- om time to time determine.

scheme meets with the approval of Mr. Lloyd-George other Welsh stalwarts. It is to be hoped it will be effectively carried through, and that similar councils may be established in England on similar voluntary bases as Education Councils for associated County Councils.

BY a majority of 152, the House of Commons passed the first reading of the Education (Local Authority Default) Bill. The object of this bill is to provide funds for the working of such schools as are necessary to complete the provision of accommodation for a district in those cases where the local authority are not availing themselves of the provision already existing. The Board of Education is empowered to make a first charge on the parliamentary grants for elementary education to the local education authority so as to recoup the managers of such schools for any expenses incurred for which provision should have been made by the local education authority. As put by Sir William Anson, this Bill was to meet the cases where a local education authority declined to sanction or consider the appointment of teachers and to make provision for the supply of coal, books and other necessaries of school life, and it did all this without alleging that the school was unnecessary or offering to provide any substitute! Mr. Lloyd-George's answer was that the County Councils are not withholding any parliamentary funds—but only the rates—from non-provided schools. "If the children were left without fuel it was a disgrace to the managers, and not to the County Councils . . This Bill would convert the Board of Education into a debt-collecting agency."

A DRAFT scheme for a National Museum and National Library for Wales has been drawn up and been presented by a sub-committee to a meeting of Welsh members of Parliament. The scheme for the museum entails an estimate of initial cost upon erecting buildings, roughly put at £40,000, and a maintenance of £8,000 per annum. Four sections of museum-work are noted: Industries, Geology, Biology, Antiquities. Loan collections are suggested. The National Library would require an initial fund of £20,000, and a rough estimate of maintenance comes to £2,000 per annum. The Library would include (1) ancient Welsh books and MSS.; (2) collection and preservation for reference of the entire body of recent and contemporary literature (books, pamphlets, reports, transactions and periodicals) published in Wales, or bearing upon Welsh matters, including a collection of Welsh newspapers.

IN this connection it is stated that Sir John Williams has purchased the Peniarth Library, and that it is his intention that this valuable collection should eventually go to Aberystwyth, to the National Library should it be established in that town, or if not to the Library of the University College of Wales, Aberystwyth, which has already a remarkable collection of Welsh books. Sir John Williams has also definitely announced his intention of giving to Aberystwyth, either to the National Library, if established there, or to the University College of Wales in that town, his own collection of Welsh books and MSS. Similarly Mr. J. H. Davies, of Cwrtmawr, who owns an important collection of Welsh books, intends to hand it over to Aberystwyth, either, again, to a National Library, if established in that town, or to the University College of Wales.

A Safe Course in Experimental Chemistry. By W. T. Boone. viii. + 180 pp. (Clive.) 2*s*.—This book follows on lines now familiar to teachers of chemistry. The experiments are concisely expressed and seem to be practicable. A student who works through the course should have a good elementary knowledge of the subject. The illustrations leave much to be desired. We notice Mr. Boone speaks of "wooden corks."

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

O. Jespersen, How to teach a Foreign Language. 194 pp. (Sonnenschein.) 3*s.* 6*d.*—We are glad to possess this translation of Prof. Jespersen's excellent book. It gives a lucid exposition of the reform method, and is all the more interesting for us because the author seems quite unaware of what has been done in this respect in England during recent years. The book should be purchased and most carefully studied by every modern language teacher. The translator has done her work well, on the whole; only here and there a quaint expression disturbs the even flow of argument and illustration.

English Colloquialisms with their French Equivalents. By A. H. Smith. iv. + 120 pp. (Hachette.) 1*s.* 6*d.*—The English colloquialisms are given in the alphabetical order of salient words, with idiomatic French renderings in parallel columns. As far as we have tested the book, it is accurate; and we recommend it as a handy work of reference. Doubtless, like Mr. Payen-Payne's excellent volume, it will expand with each succeeding edition.

German Strong Verbs and Irregular Weak Verbs. By C. Heath. vii. + 115 pp. (Blackie.) 1*s.*—This little book gives the German verbs at quite unnecessary length, yet contains nothing that will not be found in any ordinary grammar. We deprecate the continued production of books dealing with a single section of the accidence or syntax. A good grammar is required in the intermediate stage; but that should suffice. For advanced pupils the book is, of course, not intended.

Lamartine, Graziella. Edited by Dr. A. T. Baker. 36 pp. (Blackie.) 4*d.*—This edition of notable extracts from a beautiful tale may be warmly recommended, for the text is carefully printed and the editor has done his work very well.

Schiller, Der Neffe als Onkel. Edited by H. J. Chaytor. 70 pp. (Blackie.) 1*s.*—This adaptation of Picard's "Encore des Ménechmes" is amusing, and suitable for cursory reading by a fairly good class. The text is clearly printed, but not free from errors. The introduction and notes are adequate; but the editor is incorrect in saying that Schiller's father "proposed to make him a lawyer"; and why does he speak of *Knall und Fall* as an instance of alliteration?

Elementary German for Sight Translation. By Dr. R. C. Ford. 43 pp. (Ginn.) 1s.—This is a collection of fairly easy extracts, anecdotes, short stories, and a few poems, with English renderings of difficult words at the foot of the page. The book will serve for the purpose of unseen translation, but is not appreciably above the average of similar compilations.

F. Gerstäcker, Germelshausen. Edited by G. M. Lovelace. xiii. + 107 pp. (Ginn.) 1s. 3d.—The editor has selected a singularly weird and uncanny story as the *corpus vile* for instruction in niceties of grammar. Even for cursory reading we should hesitate to recommend the book. We do not deny that the annotations and vocabulary are the results of conscientious work.

E. Rostand, Les Romanesques. Edited by H. LeDaum. xix. + 101 pp. (Ginn.) 1s. 6d.—This delightfully fantastic work, one of Rostand's earliest works, will make excellent reading for a fairly advanced class. The introduction gives details about the author, the play, and the metre, and the notes ably elucidate the text. Sometimes the renderings suggests a trans-Atlantic origin; and we confess to have smiled at the author's recommendation that expressions like *au diable!* should be "translated mildy, though firmly."

Gasc's Concise Dictionary of the French and English Languages. Part I., French-English. 433 pp. (Bell.) 2s.—Teachers who have learnt to appreciate this dictionary will be glad to know that the French-English part in the intermediate size is now obtainable as a separate book, and at a very reasonable price.

Classics.

Sources for Roman History. B.C. 133-70. Collected and arranged by A. H. J. Greenidge and A. M. Clay. iv. + 245 pp. (Clarendon Press.) 5*s.* 6*d.* net.—Mr. Hill's "Sources for Greek History" has already won a place in the respect of scholars, and has been found an extremely useful aid to the student. The present work, although it does not cover so wide a range, being confined to a little over sixty years, is, in its way, equally good. It is a momentous period in Roman history, and the authorities, often perplexing, are so scattered that the writers of this book have done a real service in collecting them. The arrangement is chronological, the only other distinction being the separation of internal and external history. Something can be said, no doubt, for classification by subjects; but, on the other hand, this would involve repetition and other difficulties, and will be a useful exercise for the student to classify for himself according to his needs. Points of disputed sequence are discussed in an appendix. The internal history has been more fully treated than the external; passages too long to be cited, which frequently occur in the latter, being represented by references. It is instructive to see rival or contradictory accounts of the same event side by side, and to sift the evidence cannot but prove to be a useful exercise. Fully to criticise is of course impossible without practical experience of its use; but it seems to us to be admirably clear and for all important points quite full enough. We hope the authors may be encouraged by the reception of their book to continue their labours in the same direction.

A History of Roman Literature. By Harold N. Fowler. ix. + 311 pp. (Appleton.) 5*s.* net.—We have found this "History of Roman Literature" a brightly-written and readable book, in which several points are to be commended. The most important authors are illustrated by quotations, which are given in English, so that the book can be used by those who do not know Latin. Moreover, the work is carried down to the end of Roman literature proper in the fifth century. It is a good thing that scholars are beginning to have some regard to the end, the history of which is so important for the understanding of the modern world; in the old schoolbooks the world might have come to an end with the battle of Actium for all they showed to the contrary. This book is also written with a due sense of proportion, and whilst it does not neglect the earlier writers and those who are little more than names to us now, most of the space is occupied with the more important authors and epochs. There are, however, some matters in which we are not disposed to agree with Prof. Fowler. We think he unduly depreciates the importance of the indigenous Italic drama or mime, the Fabulae Atellanae and the *Fescennina locutio.* Nor do we think he has the right view of the nature of the Saturnian verse, which was, we believe, dependent upon the accent of spoken Latin, not on quantity at all, and the accents as he marks them are artificial; but this is a thorny subject, and has not been properly discussed since Mr. Lindsay's discoveries have thrown so much light on the metres of Plautus. It seems more than likely that the indigenous Latin verse was accentual, and that it survived amongst the people all through Roman history, cropping up now and then in some popular distich like the epigrams preserved by Suetonius, or poems like the *Pervigilium Veneris.* The quan-

ystem was an avowed imitation of the Greek, and seems been artificial from beginning to end, when it was ousted popular system, which had all along survived outside of The criticism is sometimes rather childish ; as when the *Seculare* is described as "the work of a masterly artist inspired poet." Artist, yes ; but there never was a poet repute who had less inspiration than Horace. We acquit owler of believing *amet* to be a future (p. 242), but a oy may be mystified. There is a very useful bibliography led, which includes modern translations such as Bohn's, ange to say, does not include the old English translations, are often noble monuments of fine letters if not useful as ."

Odyssey of Homer in English Verse. Translated by J. Way. Third Edition. viii. + 323 pp. (Mac- . 6*s.* net.—Mr. Way is a practised translator, but his is better suited to iambic than to quicker metres. We very much like the metrical style of this version, which s us of Swinburne and William Morris. However, it is e translator has used his measure, such as it is, with skill. et that this is a third edition proves that the work has favour with the public. The translation is faithful and e, the style rather affected.

Edited Books.

Thomas More's Utopia. By Prof. Churton Collins. 284 pp. (Clarendon Press.) 3*s.* 6*d.*—This edition has repared avowedly with the aim of bringing Sir Thomas great work within the reach of students, and to some ecuring for it a wider appreciation and currency. "As ce and work of art," remarks the present editor, "it f not in vogue, at least in celebrity, with the 'Pilgrim's s,' with 'Robinson Crusoe' and with 'Gulliver's .'" The need for its study is therefore not to be trated, and this edition is planned on singularly liberal It is based on Lupton's work in the main, but Prof. n Collins takes great pains to expand the earlier editor's y showing the relations between the doctrines of Utopia : knowledge of philosophy and history which went to the ; of More's mind. Hence the introduction may be ed as an elaborate piece of work displaying scholarship ins, and very readable. The notes are bulky, forming alf the volume, and, as they deal apparently with every f importance that can arise out of the language of this , advanced scholars, as well as students, may derive no atisfaction from the editor's labour in this field. Alto- for educational purposes this edition promises to become tative and to hold the field for some time to come.

len's Essay of Dramatic Poesy. By T. Arnold. xxiii. pp. (Oxford Press.) 3*s.* 6*d.*—This edition is notable learning and research, and ought to do something to ise Dryden's by no means too well known prose among s of English literature. There is a splendid introductory ; what modestly is called a "preface" is, in fact, a hgoing discussion of the literary questions which centre ssay. A note on the rhyming play is made up of critical from recent works, all of great value. The notes range immense field, and are just what Mr. Arnold's other ight lead us to expect.

hool Poetry Book. By Dr. W. Peterson. 406 pp. ans.) 3*s.* 6*d.*—We had occasion to remark upon this ion some time ago, when it was issued in two volumes r and senior scholars respectively. In one volume it is tter worthy of praise, and this somewhat less expensive collection ought to find great favour. Concerning the selection of poetry, we can add little to our former commendatory remarks. The editor has gone frequently off the beaten track, and, what with old and what with new matter, has provided schools with a really good collection of poetry not too far removed in subject or expression from the intelligence appropriate to school life.

Early Story of Israel. By Evelyn L. Thomas. 151 pp. (Longmans.) 2*s.* 6*d.* net.—This little volume presents many attractions. The narrative is, of course, of the first importance, and with this the writer has dealt judiciously. The early history of Israel, involving, as it must do, some account of the events recorded in the Book of Genesis, is by no means a simple one when it has to be put so as to suit youthful intellects, and yet not give them a bias towards views which they will perhaps painfully and tearfully unlearn in the light of later experience. It may be said that, while writing from the High Church point of view, Mrs. Thomas is studiously fair and commendably broad and historical in her way of thinking. Her style may be called simplicity itself. The illustrations of this volume are deserving of the highest praise. There are many woodcuts and three beautiful maps ; there are also reproductions of some of the celebrated biblical pictures of Millais, Watts, and Hunt; two by Rembrandt, and Michael Angelo's "Moses."

The Dread Inferno. Notes for Beginners in the Study of Dante. By M. Alice Wyld. 198 pp. (Longmans.) 2*s.* 6*d.* net.—The authoress of this little book has rendered a distinct service to those who would take up the study of Dante. She has put together what has obviously been used by her over and over again as teaching material on the subject of Dante's great poem. The story she has to tell she tells clearly, and, with one exception, on page 135, she avoids the vice (common to those who try to popularise a great thinker on morals like Dante) of being preachy. This little book is by no means a trifle to read. Miss Wyld has a thorough grasp of her subject, and she handles it in a distinctly individual way ; the clearness of her conception is seen in the handling of her matter. The book impresses by its solidity of exposition. These "notes" are never superficial or obvious. They are the product of much and wide reading, and a restrained enthusiasm for the subject which prevents any jejune views. It may be confidently recommended, and used in conjunction with Prof. Gardner's "Primer" will be found useful.

Chaucer's Prologue and Squire's Tale. By A. J. Wyatt. 182 pp. (Clive.) 2*s.* 6*d.*—This is a subject set for a forthcoming examination of the University of London, and this book contains all the matter necessary to make a student fully acquainted with the main points of critical and philological research involved in it. The amount of information compressed into a small compass is marvellous. The art of the practical teacher is everywhere displayed, and much labour will be saved to any student who can intelligently use the indications given by the editor, especially in regard to the further study of Chaucer, for which a valuable list of books is supplied. The notes are full though not too numerous, and they are clearly stated. The glossaries are excellent. The appendix dealing with the criticism contained in the Introduction is a new departure, but it is a happy thought and a valuable device for driving home some of the important points of Chaucerian interest.

Bacon's Essays. I.-XX. By G. F. Watt. 88 pp. (Clive.) 1*s.* 6*d.*—This is one of the set subjects for the Intermediate Arts examination of the University of London in 1905. The introduction supplied here is a very short one, highly condensed after the manner of books in this series. The notes are numerous, succinctly put, and, for the purposes of this edition, just what are wanted.

Shakespeare's Henry IV. Part I. By F. W. Moorman. xxxvii. + 178 pp. (Blackie.) 1*s.* 6*d.* — Mr. Moorman has done a careful piece of work; but he also, "in sending forth this edition," gives some indications that he expects it to mark an educational epoch. In this we cannot entirely agree with him, and his acknowledgments of indebtedness to sources of information "that no gentleman's library should be without" (if by "gentleman" we may describe a Shakesperean scholar) are wanting in a sense of humour, to say the least of it. Otherwise the work shows thoroughness and some genuine critical power. The notes are fairly good, and the introduction is complete and lucid. The glossary would appear to be open to objection in cases like the following: "Grief (i. 3, 51), physical pain; M.E., grief, gref; O.F., grief, gref; Lat., gravis, heavy, sad." Which is all quite correct, and absolutely obvious, and—may we say?—quite unnecessary.

Selections from King Henry IV. 32 pp. (Blackie.) 2*d.*—This is well done. The object is to present Henry the Prince rather than Henry the King. The whole selection turns on the development of Henry of Monmouth's character. The notes must be intended for very juvenile students, for surely everybody knows that a factor is an agent or steward; that "stout" means brave; and "dearest," best; and so forth.

An Elementary Guide to Literary Criticism. By F. V. N. Painter. 196 pp. (Ginn.) 4*s.*—Brief, and intended for beginners, this work merits more than a passing notice. It is the product of genuine critical ability in the author and something like a genius for teaching every young student how to recognise the leading features of any significant work. It grasps the whole subject in a comprehensive manner, and is illustrated by an array of examples. The so-called review questions dealing with each section also tend to cover the whole ground in a penetrative manner. As an introduction to criticism it is thoroughly to be commended.

An Introduction to the Poems of Tennyson. By Dr. Henry Van Dyke. 93 pp. (Ginn.) 2*s.* net.—Teachers, as well as general students, will find these pages extremely serviceable. Dr. Van Dyke writes from the literary, not from the pedagogic point of view; and he displays a discriminating, if still enthusiastic, admiration for Tennyson. The five essays included in this attractive volume are capable of yielding undiminished satisfaction. Dr. Van Dyke is a careful and a most competent critic, with a charming style and a large fund of illustrative comment at command.

Scott's Lady of the Lake. By Flora Masson. xxxii. + 198 pp. (Dent.) 1*s.* 4*d.*—Editions of Scott's various works are as the sand upon the seashore for multitude, but we venture to predict a wide acceptance for this one, if for nothing else because of the charming artistic features in which it abounds. As a matter of fact, the editorial labour spent upon it has not been small, and the introduction is a thoroughly good piece of work, while the notes are numerous; but, for all that, the illustrations call for special remark. School-books are rarely dull when they find a place in the Temple series. The edition merits high praise.

Macaulay's Life of Johnson. By A. P. Walker. xxx. + 92 pp. (Heath.) 1*s.*—If the present writer detested Macaulay even more than he does, he could only speak in terms of the highest praise of the editorial labour expended on this small book. For its size it is wonderful; only why should Mr. Walker make himself responsible for the statement that Macaulay was the son of a Presbyterian clergyman and a Quakeress, whereas that not unattractive ancestry was removed from him by a generation? A slip of this kind may, however, perhaps be forgiven in consideration of the notes, maps, charts, and tables appended to this little work. These are splendid, and display erudition and discrimination in an equal degree.

Scott's Quentin Durward. Abridged for Schools. 261 (Macmillan.) 1*s.* 6*d.*—This abridgment has been carefu done, and a series of notes at the end enables the portic omitted to be grasped without the labour of reading the There is also, what is a desideratum even in an abridged editic an introduction which deals with important matters, in particu with astrology and heraldry—two features of Scott's wo without some guide to which youthful readers are left in dark as to much of his meaning. The text is diversified some reasonably good illustrations, and there is a frontispi purporting to exhibit the features of Louis XI. No arti name is given to this; and the source of those royal lineame remains obscure, which is hardly fair to the student; (we hope also) not *quite* fair to the deceased monarch.

New Testament Bible Stories. Edited, with an Introduct and Notes, by Richard G. Moulton. xii. + 130 pp. (M millan.) 1*s.* 6*d.* *Old Testament Bible Stories.* Same edi xii. + 310 pp. (Macmillan.) 1*s.* 6*d.*—These books are alre well known to many readers of THE SCHOOL WORLD part of the "Modern Reader's Bible." In the present chea form the volumes should be largely used in schools. Follow the words of the Bible as the stories do, teachers can introd the books into their classes with complete confidence. editor's selections and omissions are wise and judicious.

The Winter's Tale. By T. Page. 230 pp. (Lee Arnold.) 2*s.* 6*d.*—This is an addition to the well-known ser of Moffat's "Plays of Shakespeare." It must be conced that an enormous amount of matter has been supplied by t editor, and this is all put with conciseness. There is a little everything, and the research exhibited is unusually wide. T sketches of Shakespeare's characters and the literary notes a valuable; and the notes and tables show the trace of t practised but elementary teacher. Surely, also, too ma well-known expressions are explained; as, moved (= trouble agitated), and honesty (upright conduct), and many others. Tl notes on the language of the play are thorough; but the bo may make prigs rather than scholars by its extreme adaptabili to methods of cramming.

Shakespeare's Twelfth Night. By Fanny Johnson. xxxvi. 157 pp. (Blackwood.) 1*s.*—This particular series of shillii Shakesperian plays is becoming numerous. Within the lin set for it, it must be allowed that it does what it professes do, and quite young students will find it useful. The story the play as told in the introduction is readable and clea another more scholarly and critical second portion of the intr ductory matter contains a great deal of well put informatio One peculiarly interesting section dealing with the actors wl have shone in the part of Malvolio, and some other histrior details, is noteworthy. But the meaning of Puritanism is r sufficiently well dealt with later on; "purity of life" is no sufficient explanation of Puritan aspirations, even for brevi The notes are multitudinous but mostly short. The glossa is full.

Geography.

An Elementary Geography of the World. By Lionel Lyde. iv. + 132 pp. (Black.) 1*s.* 4*d.*—It is difficult understand in what sense this book is elementary. It is rath a summary which might, perhaps, be useful to older pup To name a few of the terms on the first half-page is enough raise a doubt as to whether its title rightly describes the boo thus, we find "lithosphere," "hydrosphere," "distribution animal and vegetable life," "precipitation," "subsidence large areas," "consequent elevation of narrow bands," all the first half-page, and it is possible that the ordinary

night equally well learn his geography in a foreign language. On p. 2 the doubt arises as to whether Prof. Lyde is scientific enough. We are told that mountains "indirectly attract clouds," and "rising heat draws in clouds," and we find a mention of "damp heat." We agree with the late Prof. Huxley that the writer of elementary books should exercise even more care than the author who undertakes to produce a text-book.

A Survey of the British Empire. 352 pp. (Blackie.) 2*s.*—In addition to a description of the geography of the British Empire this book provides information as to the important historical events in its growth and also a useful survey of the commercial activities of the British peoples. The book is illustrated and provided with coloured maps. Several well-arranged summaries add greatly to the value of the volume.

Science and Technology.

The Philosophy of Auguste Comte. By Prof. L. Levy-Bruhl. Translated by Kathleen de Beaumont-Klein. With introduction by Frederick Harrison. (Swan Sonnenschein.) 10*s.* 6*d.*—The philosophy of Auguste Comte has never before been presented to English readers in so masterly and sympathetic a manner as in this excellent translation of M. Levy-Bruhl's luminous work. With the Positivist thinker's law of the three states, with his classification of the sciences, his social statics and dynamics, his religion of humanity, most of us have a bowing acquaintance. By the study of this work we can, if we will, see all these in their true perspective as parts of the development of Comte's comprehensive thought. Whether we agree with his main conclusion or not, and, perhaps, most of us will disagree, we shall rise from a critical examination of M. Levy-Bruhl's treatise strengthened by having been in contact with a strong man strongly portrayed. Two thoughts only can we here emphasise as being of value to teachers. The first is Comte's cardinal tenet, that science does not consist in the mere accumulation of facts, but in the grasp of their meaning and significance for the system of knowledge. This does not, of course, imply the neglect of facts; far from it; but rather the constant subordination of details to the truly scientific purpose. The second point is his advocacy of the teaching of art as the universal language, in which great conceptions are embodied through the work of the imagination. "To teach all children music and drawing, as Comte requires in his positivist plan of education, is not to make them participate in the luxury of 'accomplishments.' It is placing within their reach works which appeal to the whole of humanity; it is giving them a stronger sense of the solidarity which is the essential characteristic of human society. . . . Works of art are the common property of the whole of humanity, and no one should be deprived of that inheritance."

Elements of Electro-magnetic Theory. By S. J. Barnett. 473 pp. (Macmillan.) 12*s.* 6*d.* net.—In this mathematical treatise the author has presented a rigorous and modern introduction to the fundamental principles of electro-magnetic theory, together with some of the simpler of their more important non-technical applications. Seven chapters are devoted to electrostatics, one to magnetism, and the remainder to the general principles of the electric current and to electric waves. A short paragraph on the modern electron theory of conduction is included, but the discharge of electricity through gases is not discussed. The volume will be read with advantage by those students of the subject who are fully competent in mathematics.

Radium, and All About It. By S. R. Bottone. 96 pp. (Whittaker.) 1*s.*—This readable little book will be welcome to the many who, though not versed in matters scientific, are anxious to have trustworthy information concerning the remarkable properties of radium. The four chapters are devoted to historical notes, the mode of detection and extraction, the properties of radium, and to theoretical considerations.

Mechanics, Molecular Physics and Heat. By R. A. Millikan, 236 pp. (Ginn.) 7*s.*—This volume is intended to take the place both of a laboratory manual and of a class-room text. It represents the first third of a year's course of general physics in the Junior College at the Chicago University. Each of the twenty-three sections gives a full discussion of a general principle and terminates with an experiment. Special effort has been made to present physics as a science of *exact measurement*, and purely manipulative experiments have been omitted. Prof. A. A. Michelson, in an introductory note, rightly insists that modern instruction in advanced physics requires the elimination from the laboratory of all instruments and methods which are not suited to the demonstration of the exactness of modern science. Much of the apparatus described is of new design, but it is fully described in the text and information is given as to where it may be obtained. The volume possesses many merits, and should be read by all students preparing for the Intermediate and Final examinations for degrees in science. A second volume will present, on the same general plan, the leading principles of electricity, sound, and light.

Practical Chemistry. Part II. By William French and T. H. Boardman. xiii. + 126 pp. (Methuen.) 1*s.* 6*d.*—Though one or two of the chapters are scarcely "practical," this book maintains the high character of the earlier part written by Mr. French alone. In noticing the first volume in our issue for May, 1900, we directed attention to the small size of many of the illustrations, and we are sorry to find that the same fault must be found in this case. The course of work given by the authors may be recommended as quite suitable for a second-year student of chemistry.

Pioneers of Science. By Sir Oliver Lodge, F.R.S. xv. + 404 pp. (Macmillan.) 6*s.*—Since the original edition of this work appeared eleven years ago, many readers have profited by its clear expression of fundamental facts of the old astronomy and have been entertained by the living pictures of pioneers of celestial science from Tycho Brahé to the Herschels. Sir Oliver Lodge is always original in style; and his crisp statements of reasons and results sparkle here and there with humour. The book is pleasant and instructive reading, but a more careful selection of illustrations would in many cases have improved it. Lord Kelvin's name occurs as Sir William Thomson in several places, and the portrait on p. 373 represents him as he was many years ago.

Mathematics.

Leaving Certificate Examination. Mathematics, Lower and Higher Grade. Specimen Examination Papers. 20 pp. (Eyre and Spottiswoode.)—New regulations for the Leaving Certificate granted by the Scotch Education Department are to come into force in the examination of 1905, and specimen papers have just been issued by the Department with the object of conveying to teachers a definite idea of the future arrangement and scope of the examination. The alterations affect only the lower and higher grade papers, no change being proposed at present as regards the papers for honours. As might be anticipated, the most striking change is in the character of the questions in geometry; deductions of the old type, though not absent, are frequently replaced by arithmetical and algebraical applications, and accurate drawing to scale has a prominent place. Questions involving graphs appear in both the Lower and the Higher Grade papers. In the questions on algebra and geometry more stress seems to be laid than formerly on arithmetical

results, while for calculations that require logarithms four-figure tables are to be used. All the questions are straightforward, and such as might be answered by properly prepared pupils; the papers do not err on the side of severity, though they are such as to test the pupil's knowledge. The general lines on which the questions are drawn up are excellent, and give ample scope for teachers who wish to make the most of the advantages which the new regulations undoubtediy offer. The Leaving Certificate Examinations have done great service to sound mathematical teaching in Scotland; their usefulness should be enhanced under the new regulations.

An Algebra for Junior Forms. By R. B. Morgan. 173 pp. (Relfe.) 1*s.* 6*d.*—It is stated in the preface that this little book is an attempt to follow in the main the recommendations of the Committee of the Mathematical Association on the teaching of algebra, but at the same time due deference has been paid to the existing and time-honoured methods which the present style of examination papers compels teachers to follow. Without discussing the compatibility of the two attitudes thus indicated, we gladly recognise two valuable features, namely, the early use of graphs and the checking and verification of work, though we must add that some of the graphs are rather crude. Naturally the introductory chapters are the most difficult; while the exposition is on the whole simple, it is not easy at times to see whether the rules given are merely rules or are reasoned conclusions. The definition of an identity (§31) and the statement at the beginning of §34 seem to us to be radically bad; surely it is time to abandon the traditional definition of an identity. The range of the book extends to fractions and quadratic equations. In spite of some defects this book on algebra has much to recommend it.

Mathematical Papers (for Army Classes). By H. S. Brabant. 63 pp. (Relfe.) 1*s.* 6*d.* (without answers); 2*s.* 6*d.* (with answers).—These papers are on the lines of those set in the recent Army examinations. It is stated that they were originally set as two and three-hour papers, but in order to meet the requirements of the public schools they have been divided into sections so that each may be set in the form of one-hour papers. The collection should prove very useful to many teachers; the questions seem both reasonable and varied.

Graphs and Imaginaries. By J. G. Hamilton and F. Kettle. 41 pp. (Arnold.) 1*s.* 6*d.*—This little book develops in a very simple and interesting manner a graphical method of finding the imaginary roots of a quadratic equation. Just as the roots of $x^2=3$ are found as the abscissæ of the intersections of $y=x^2$ and $y=3$, so the roots of $x^2=-3$ are found as the abscissæ of the intersections of $y=-x^2$ (the shadow of $y=x^2$) and $y=-3$, provided that in the latter case the abscissæ be affected with the factor $\sqrt{(-1)}$. The general quadratic equation is discussed both from the usual graphical point of view and from that of Euclid VI., 28, 29 (the circle method); it is shown that the actual tracing of the shadow parabola can easily be dispensed with. There are some interesting constructions for the (imaginary) points of contact of tangents drawn to a circle from a point within it. It would be a good exercise for a pupil to try to give the general solution of the quadratic equation: the hint given above as to $x^2=-3$ should be sufficient to set him on the track.

Worked Problems in Higher Arithmetic. By W. P. Workman and R. H. Chope. vii. + 144 pp. (Clive.) 2*s.*—To candidates looking forward to the Civil Service and other advanced examinations, this little volume should prove a real boon. The book is divided into two sections. The first section (pp. 1-53) contains a great variety of what are called general problems, and will be of special advantage to the ordinary student who so often finds a difficulty in attacki problems from the arithmetical point of view. The seco section (pp. 54-144) discusses problems in higher pure arit metic; in this section those who are interested in pure arit metic will find much to attract them.

Modern Navigation. By William Hall. viii.+378+xv. p (Clive.) 6*s.* 6*d.*—Within the limits which the author has pr scribed for himself, this book is both thorough and remarkal complete. It is intended primarily as a text-book for studer of navigation, and secondarily as a handbook for navigators, b its scope is restricted to three divisions of the subject, namel the Dead Reckoning, Observations, and Mathematical Theo The notion of position lines is introduced early, and graphi solutions are freely used; while special care seems to have be taken with the computations. The notices of instruments a very complete, and the chapter on chart work is exceedin good; but, so far as we have tested, the standard reached through the book is very high. In all respects we think tl treatise possesses very unusual merits as a sound and trustwort exposition of its subject.

An Introduction to the Study of Geometry. By A. J. Presslan 48 pp. (8 blank). (Rivingtons.) 1*s.*—This little book is sa to be "written for the beginner, whose fingers are all thumb and it only assumes that he can sharpen a pencil." As a matt of fact, this modest outfit would not carry the beginner very fa and the author, happily, demands more of him from the outse The simple course of geometrical drawing given in the book exceedingly well drawn up, and the constant questions shoul suggest even to the dullest pupil that there are properties geometrical figures which, though suggested by one diagran are true for a whole class. The questions might perhaps o casionally be a little less suggestive; thus "is the sum two rig angles," "is the angle TOR double the angle TQR," an similar questions might be expressed in a form that would not s readily suggest the answer. An excellent feature is the Table properties of geometrical figures to be completed by the pupil A pupil who can complete the Table has made a good beginnin in the study of geometry.

Elementary Geometry of the Straight Line, Circle, and Plan Rectilineal Figures. Part II. By Cecil Hawkins. ii.+167-296 pp. (Blackie.) 2*s.*—Part I. was noticed in THE SCHOOL WORLD for February (p. 80). The second part treats of area and similar figures, the theorems in proportion being establishe on the basis of commensurable magnitudes; the accuracy of the numbers obtained for ratios and areas—an important matter that is too often neglected altogether—is well noticed in §§ 97 and 112-113. The theorem that if two triangles are equiangula they are also similar (why does the author say "must be"?) proved first for two right-angled triangles, and then is extende to triangles of any shape by dividing them into right-angle triangles. We do not think this proof to be so natural as th which depends on the method of dividing a straight line in equal parts, nor is it more general. In the order followed t theorem corresponding to Euclid I. 47 comes very late. W think it a mistake that such a simple and important theorem not taken up early in the course. The present tendency postpone the discussion of areas seems to us to be unfortuna Chapters XIX., Similar Polygons, and XX., Further Propert of Circles, contain much valuable matter, and the Miscellaneo Examples of Chapter XXI. give ample scope for exercise. Pa I. and II. together furnish a good course in geometry, but th hardly form the ideal text-book.

The Elementary Principles of Graphic Statics. By Edwi Hardy. 165 pp. (London: B. T. Batsford.) 3*s.* net.—T book is stated to be specially prepared for students of scien

and technical schools and for those who are entering for various examinations, such as those of the Board of Education, in building construction, machine construction, drawing and applied mechanics. It is of a quite elementary nature, and is written in a simple and unpretentious style. The exposition is usually clear, and the treatment of the funicular polygon and of reciprocal diagrams is well within the grasp of earnest students, even if they have no great mathematical training. As an introductory book, it seems well fitted for the class of students to whom it appeals.

Theoretical Geometry for Beginners. Part III. By C. H. Allcock. ii. + 113 pp. (Macmillan.) 1*s.* 6*d.*—This Part contains the substance of Euclid's Book II., of Book III., 35-37, and of Book IV., 10-16, but includes much additional matter, such as theorems on the radical axis and problems on tangency of circles and lines. The arrangement of the matter, the selection of propositions, and the demonstrations are exceedingly good, so good that we see hardly any changes to suggest, except that we think a proposition (rather than an exercise, p. 9) corresponding to the equation $(a-b)\,x = ax-bx$ might well find a place. The use of the negative sign in geometry seems to be as legitimate as in arithmetic, and it helps to bring algebra and geometry more closely together. The treatment of inscribed and circumscribed polygons is a decided improvement on the old order and, though it has been frequently used, has not received the attention in text-books that it deserves. The practical applications are of a kind much needed by elementary pupils, and the exercises are throughout both numerous and instructive.

Introduction to Quaternions. (3rd Edition.) By P. Kelland and P. G. Tait. xvii. + 208 pp. (Macmillan.) 7*s.* 6*d.*—This edition of the well-known book of the late Professors Kelland and Tait is brought out under the editorship of Dr. Knott. Those of us who received our introduction to quaternions through this work will be inclined to examine with suspicion the changes which have been made in a favourite text-book. But a careful inspection will, we think, show that Dr. Knott has exercised a wise discretion both in what he has omitted and in what he has inserted. The introduction in particular of the dynamical applications in the 9th chapter is fully justified by the importance of quaternions for physical applications; a fuller treatment of the differentiation of quaternions would not have been out of place. In its new form we may hope that the Introduction will even increase its popularity as a guide to a beautiful but difficult branch of mathematics.

Household Accounts. By Kate Manley. x.+184 pp. (Macmillan.) 2*s.*—It is perhaps not sufficiently understood how much worry can be avoided by a wife or housekeeper by the simple plan of keeping a strict account of her outlays. To any who have thought that their income is either too big or too small to require that their expenditure should be carefully noted the advice may be given to make a fair trial of a systematic method of noting their outlays. They will probably be surprised at some of the results that the trial will show. For such a trial the book named at the head of this notice will be an admirable help. The introductory chapters contain full information on nearly all matters that are likely to come within the province of the wife or housekeeper, and there is ample space on the cash sheet and the various other accounts for a year's entries. The book, however, is thoroughly suited for a wider circle, and it can be cordially recommended to teachers, students, and others interested in household management courses in girls' and technical schools.

Elements of the Theory of Integers. By Joseph Bowden. x. + 258 pp. (New York: The Macmillan Company). 5*s.* net.—In the preface it is stated that the book has sprung from a desire to put the elementary theory of numbers in a logical form, starting from the three fundamental ideas of number, equality, and sum, with their axioms, building up a system of theorems on these fundamental ideas, and then, by as natural a process as possible, introducing the derived ideas of greater, less, difference, integer, product, quotient, and so forth. Such a book is, of course, totally unsuited for pupils in schools, but it may be cordially recommended to teachers who wish to have some idea of the arithmetical basis on which is raised the structure of modern mathematics, especially in its development on the side of the theory of functions. The exposition is severely logical and furnishes a most bracing discipline. A book of this kind is rare in English mathematical literature; it is of kin with the earlier chapters in Stolz's *Allgemeine Arithmetik*, and is quite as thorough in its treatment.

Guide to the Art Examinations in Geometrical Drawing of the Board of Education. By a Drawing Inspector. 43 pp. (page 13 in. by 8 in.) (Leeds: Arnold.) 1*s.* 9*d.* net.—For students preparing for the examinations stated in the title this guide should be of very great service. The questions of which the solutions are given range over the whole syllabus, and the diagrams, of which there are 128, are well executed. The notes on the constructions are short but clearly expressed, and the numerous hints scattered through the book call attention to matters that are of importance to the learner.

Miscellaneous.

A Dialogue. By A. H. Gilkes. 86 pp. (Longmans.) 1s. net.—This little book has nothing to do with schools or schoolmasters, which we regret, since we should like to have given it a notice better suited to its merits. It attempts to portray the figure which Socrates might have cut if he had been born in our day, and brought his keenly analytical intellect to bear on modern problems. Mr. Smith, a person of honourable birth and great ability, being a candidate for a diocesean post, is invited to dine with four bishops. A chance remark sets Mr. Smith questioning, and the bishops in turn attempt to meet him, but retire discomfited, each according to his nature, indignant, shocked, bored, or ashamed. The topics are interesting, the characters of the speakers well brought out (indeed, they appear to be drawn from the life), and the analysis clever and suggestive. Moreover, it is infused with a fine wit, not always merciful, diversified with humour. It is a very clever and entertaining book, which deserves to be read.

Genetic Psychology for Teachers. By Charles Hubbard Judd. (Arnold.) (International Education Series.)—Prof. Judd begins by a paradoxical chapter on teacher-study as an alternative, or rather perhaps supplementary study to child-study. Let us be sure in our own sense-training, and we teachers ourselves are constantly developing in our own sense-reading and interpretation. We need constantly to keep alive our memories and to understand the reasons for our present modes of looking at our experiences. The practical problem really is, how can we teachers get out of the groove of tradition and enter into the attitude which is at once sympathetic and critical towards new ideas of development. The teacher is the rationalising factor in the child's development, for development is at first non-rational. But it is the business of education to render the pupil capable of becoming his own rational guide. The view taken by Prof. Judd of genetic psychology is that each teacher, over and above studying general psychology and child psychology, should systematically and rationally review the processes or retrace the processes of his own development, not indeed the old processes of childhood merely, but his recent and

self-directed phases of progress. Prof. Judd then gives chapters of methods to be pursued in dealing with the process of development in the subjects of writing, reading and number-ideas. The main thesis throughout the book is study, education — not merely each his teaching in his own grade, and not merely formal methods—but with the outcome of one's own self-active experience in learning and experience as back-ground. In other words, objective methods of teaching must be the correlative to subjective methods of experiencing. There is an interesting preface by Dr. W. T. Harris. The book is "alive" —is informed with psychological spirit, without becoming enslaved to any special school of empirical psychology.

Ludgate Standard-authors' Readers. Edited by R. R. C. Gregory. (Routledge.) 1s. 6d. (1) "Stories of Ancient Greece," by Nathaniel Hawthorne. It is a pity, surely, that these immortal stories of the Wonder Book should be edited, *i.e.*, cut down. Hawthorne's work is so admirable that it would be better to omit a story and give the others *in extenso* than to curtail. And why is the title of the book edited also? Yet of all this the children, and probably the teacher, will be ignorant; and the excellence of the stories remains.

(2) "Don Quixote," with some illustrations by Sir John Gilbert. It is greatly to be desired that any attempt to restore Don Quixote to his place should succeed; and we welcome this attempt. But if it had been possible to use a more antique version, to insert Doré's illustrations, and to make the volume a little less starched, the book would have been an admirable incentive to a boy to begin a library, and to place this and a few other volumes on a shelf of his own making.

Ten Minutes' Technique. By Arthur Somervell. 56 pp. (Curwen.) 2s. 6d.—Too much praise cannot be given to this attempt to provide technical exercises covering a wide ground, and so arranged that those who wish to keep their technical skill at the pianoforte in reasonable condition, and yet cannot afford the time for practice which would make books like Mr. Oscar Beringer's or Tausig's Technical Studies (or even Plaidy's) really serviceable, may do so without wasting time. The educational value of this book is great, and the exercises (particularly those for *legato*) are admirable. Mr. Somervell does *not* say, however (or even indicate by fingering), whether he advises the Tausig method of using the C major scale fingering for all keys indifferently. Teachers ought to recommend and use this book.

Nature Drawing and Design. By Frank Steeley. In two parts, 24 plates in each part. (Bacon.) 2s. 6d. each.—Another set of books containing drawings of flowers followed by examples of the same plants conventionalised and turned to more or less ornamental use. The idea is good, as other people besides Mr. Steeley are beginning to perceive, but though the natural flowers are carefully shown with their characteristic features, they are not prettily drawn, whilst the adaptations to decorative purposes show no particular appreciation of design.

Bacon's Copybooks on Lettering. By Frank Steeley. 24 pp. Parts I. and II. (Bacon.) 3d. each.—Each of these little volumes contains about half-a-dozen alphabets with guide lines and spaces for copying. The examples are carefully graduated and the letters which have been intelligently chosen, set before the student forms which he will do well to imitate carefully and make his own.

The Development of Power in School Work. By R. E. Hughes. 16 pp. (Leeds: Arnold.)—This little pamphlet contains useful hints as to the introduction of "leaving exercise books" in the top classes of elementary schools. With the general views on education expressed by Mr. Hughes we are in *complete agreement.*

CORRESPONDENCE.

The Editors do not hold themselves responsible for th expressed in letters which appear in these colum rule, a letter criticising any article or review THE SCHOOL WORLD will be submitted to the before publication, so that the criticism and appear together.

The Need of Co-operation between Humanists Realists.

I DO not propose to enter on a controversy with P strong, although his letter is tempting. The con "natural science" with the "scientific method," and th tions and *ex cathedra* statements which fill the lette doubts whether the "heuristic method" is conducive reasoning. I have always felt that there was a dang method, of teaching the young to generalise from one I never expected to see its champion believing himsel proved that natural science appeals to the imagina statement that his friend, Sir William Abney, is one o imaginative men alive. I am glad to grant him the c of that statement (indeed it is obviously true, if th of the glorious A and B schools thinks that they are sound educational principles); but what does it pro not know why Prof. Armstrong assumes that I was sp classical studies only in my letter. Nor do I see grounds all classical men are called unimaginative. necessarily evidence of imagination to take off your work in your shirt-sleeves; and I have seen even clas do that in hot weather. Again, South Kensington of bribing schools to teach natural science may been wise, but it does not follow that they are so do not think that anyone, even an official of the Education, will be found seriously to defend the pr subsidising one subject, whether it be Greek or I wish to appeal to principles, and to eliminate aims, whether the winning of an open scholarship, ing a government grant, or learning how to make a shop. But principles cannot properly be discuss by quiet conferences amongst experts. My object i this letter is, to point out how impossible is such a so long as scientific men take up Prof. Armstrong's "Come, you ignorant pedants," he says, "co-operate realists! Throw away your convictions; they are al If you call yourselves practical, you make yourselves I do not want to abolish literary subjects, only to practical subjects and methods, such as make it ne work in your shirt-sleeves. Pray do not offer the resul own experience; you are prejudiced and I am not, th is obvious that I must judge." If this is Prof. Ar idea of co-operation, I gladly concede him a pedes Sir W. Abney as another of the most imaginative n Not being one myself, I should have suggested in Prof. Armstrong's title for this correspondence, "D dilly, come and be killed." W. H. D.

Perse School, Cambridge.

Do these disputants wish us to believe that the world is divided into two hostile camps? In educati safely be assumed that the great majority of us moderate conservatives or moderate liberals. The the humanists suggest ultra-toryism, and those of t extreme radicalism. The voice of the moderate m seldom heard, and the result is that the more active often succeeds in getting his own way.

Assuredly the classicists have no exclusive claim to now. Some of them seem to forget that when, with

g, men were endeavouring to free themselves from l despotism, the contest became one between literature gy, and not between literature and science. Natural as then scarcely born. Modern literature, too, was e than an infant, and in their new desire to study human being freed, at last, from theological bonds, naturally turned to the literature of Greece and *literæ humaniores* supplanted *literæ divinæ*, and so t classics came to be called the "humanities." But our centuries have passed away since then, and now of modern literature, with its vast range and variety, t as great as those of the literature of old. The due n of modern literature is what many of us are pleading we for this reason to be excluded from the ranks of nists?

ation between the two factions is somewhat difficult, is inclined to admit any of the claims of the other. concessions must be made. What are the actual dispute?

first place, the classical teacher asks for much more hare of the school time-table. In the second place, ined to be a little ungenerous in his estimate of the is colleagues. Only a few days ago I heard a heated between a classical and a modern-language teacher, assical teacher absolutely refused to admit that faulty tion in French and German was in any way compar- false quantities in Latin—the former was a trifling e latter an unforgivable sin. The classical teacher uently shows some tendency to refuse equality to his . Even Mr. Winbolt relegates science and modern to a second place. Again, far too much importance be attached to the *content* of classical literature. mit that, as epic poets, Homer and Virgil stand on plane than Milton and Dante. But when we come stion of history, is not the history of modern Europe ly more importance to a boy than that of Greece e? To argue that every boy ought to read Thucy- Herodotus because of the wonderful perfection of hose writers seems to me quite beside the point. have any real appreciation of literary style until to the University. As for the drama, if Shakespeare re do not stand alone, at least they will be admitted me rank as the great classical dramatists. In the n of the British Museum, do we admire the metopes Parthenon because we feel that they are beautiful art? Is it not rather because we feel that they are of the remarkable genius of the sculptor? And does ilar argument apply to the masterpieces of classical It is, I think, the artist rather than his work that our admiration.

r for a moment the Oxford man who wakes up one o find he has "a First in Lit. Hum." For twelve n years he has done practically nothing but classics. e very "human," but he is very, very ignorant. If, he is so wofully uninformed he is splendidly educated. his future walk in life, he is almost certain to be a ccess. This we all admit, and admit ungrudgingly. npared with the large number of boys in our secondary hat an insignificant handful of university men obtain 'Firsts" or "Seconds." And it is obviously unfair t, because a classical training proves a great success it is therefore an ideal training for all. Indeed, the trary seems to be the case. Besides, the greater boys leave school about the age of seventeen, and up to that time have devoted half their energies to of classics are altogether unfitted for the rough and life. Their general education is beneath contempt, and their specialised work on the classical side has stopped far short of the point at which it can be of real service.

Dr. Rouse refers to what, in my opinion, is the one really great advantage derived by a boy from the study of Greek and Latin: it demands from him continuous mental application and concentration of effort. Mr. Winbolt also seems to have this idea in his mind when he speaks of the "puerilities" that now have a tendency to find their way into the schools. But is not the advantage in question too dearly bought if a boy leaves school at seventeen? A science teacher's work ought to be quite as exacting in the matter of hard thinking as that of the classical teacher.

The cry from the opposite camp is—things, not words; the workshop, not the class-room. The realist is, however, an eminently reasonable fellow at heart, and when cornered he tells you that his demands are really only two: (1) three or four hours a week for natural science, and (2), the adoption of the "scientific method" in teaching, let the subject be what it may. His first demand is reasonable enough; so also is the second when properly understood. He simply urges the recognition of the science which underlies the art of teaching. Briefly, he says, don't talk, but teach.

The points at issue, then, are few. The great concession that the classicist is asked to make is the recognition of the principles of proportion and equilibrium amongst the leading groups of subjects of the school time-table, and the postponement of any form of specialisation until the age of sixteen or seventeen. At this age there is less objection to specialisation, whether in classics, mathematics, or science, especially if a boy is going up to the University. The classicist will be recognised, and recognised willingly, as *primus inter pares*, if this will satisfy him. Let him once admit equality to science and to modern literature and the quarrel will end. If he refuses this I am convinced that practical England, educationally awake at last, will soon demand from him a good deal more.

Bedford. F. W. W.

Vacation Homes in France and Germany.

In these days of co-operative holidays and international communication, it is a truism to say that a knowledge of French or German is imperatively needed. How can our pupils most economically and pleasantly become proficient? All teachers know how difficult it is to arrange for a boy or girl to lose part of his or her school course and go abroad in term time, but it is not so difficult to arrange a two months' vacation, and, instead of taking the ordinary holiday, exchange homes with a French or German student similarly situated.

I can hear parents exclaim, "What a nuisance—take a strange boy into our home circle!" Well, it has often been done, and the expected nuisance has become a steady friend. To tell the truth, the idea is only useful for the limited section of students who wish to get on in life, and whose parents are willing to take a little trouble in order to help them.

The question is, what means are there for bringing about an exchange of visits.

At present there are three agencies. In London the *Review of Reviews*, Norfolk Street, Strand, has made the "exchange" a speciality. In Paris, M. Toni Mathieu, 36, Boulevard Magenta, a Government inspector of education, has the sanction of the French educational authorities and has just arranged for a special committee; in Berlin, a bookseller, Herr Hempfler, Belforterstrasse, has often been able to help; whilst the *Literary Echo*, a German educational journal, is manifesting keen interest. In every case it is a labour of love, but those desirous of making the exchange are expected to defray the cost of enquiries, postage, stationery, the meeting the exchanges at intermediate stations when needed, and so on. It is necessary to begin

enquiries early in order to arrange for the summer holiday, and when matters are settled it would be a good thing if the two young people commenced a paper acquaintance by means of letters.

But the co-operation of teachers is necessary now. If a schoolmaster notices a boy willing to work, for whom such an exchange would be an advantage, it would be a real kindness to mention this to the parents and suggest the plan. In France and England the schoolmaster's reference is sufficient. I may add that the suitable age is from 15 to 17.

E. A. Lawrence.

The Teaching of Modern Languages.

When I wrote my letter to The School World on the subject of the teaching of modern languages, I was sanguine enough to imagine that its meaning was perfectly clear, and that no one would take *au grand sérieux* what, at any rate, I had intended as sarcasm.

I was mistaken, however, and I feel that my reputation is at stake. I should have followed the example of Artemus Ward, and appended the postcript: "N.B.—This is rote sarkastik."

In reply to "A Retired Schoolmaster," I should like to say that the direct method by no means neglects exercises, but favours those of a somewhat more rational kind than the "coal-scuttle of my grandmother's aunt" type. There will be found abundant material, for instance, in Rippmann and Alge's "First French Book" (Dent), for exercising and testing one's pupils, not only in such minor details as irregular plurals (dear to examiners' hearts), but also in the use of ordinary, idiomatic, every-day French, which is much more to the point.

After all, need we be so anxious about a few poor words which happen (through a clerical error) to take *x* instead of *s* in the plural? Will it not be quite sufficient to note the plural form of each as it happens to crop up in the ordinary course of reading or composition, pending that happy time when the s, which is their birth-right, shall be restored to them? As Darmesteter says, "This strange and worthless rule, which the French Academy would do well to suppress, is due to a vague reminiscence of the usage in Middle French, according to which the *-us* was replaced in writing by an *x* after an *l*, or an *l mouillée*, which had been transformed into a vowel *u*."

What time is wasted on these unimportant points, time which might well be employed in getting a grip of the ordinary forms of expression really characteristic of the language! It is quite surprising how much French one may read, write, or speak without happening to know the plural form which is equivalent to "ministers' reports" or "brakes for shoeing vicious horses." This kind of accuracy is bought too dearly.

I should like to ask "A Retired Schoolmaster" to read the new English translation of Jesperson's book, "How to Teach a Foreign Language" (published by Sonnenschein), and also Prof. Rippmann's "Hints on Teaching French"; to become a member of the *Association Phonétique Internationale*, and study its principles as applied to the teaching of modern languages, as well as Paul Passy's works on the same subject. He will find out then, I think, that the direct method is something much more scientific than the ordinary conversation lesson.

As for Bacon's remarks on the "ready man" and the "exact man"—I quote from memory, and I hope I have the right epithets—I confess that, in the matter of living languages, I should prefer the former, always supposing the two to be mutually exclusive, a supposition which I do not believe to be correct. The pupil who can write down accurately, for example, the different plural forms of *aïeul*, *travail*, *oeil*, &c., with their respective meanings, or the rules relating to *feu*, *nu* and *demi*, may score more marks at an examination, but he will scarcely get as much satisfaction from his study of the *language as the pupil who has at* his disposal a small but sufficient working vocabulary, who can use it readily both in speaking and in writing idiomatic French, and has learnt to read without mentally translating every sentence as he goes.

S. A. Richards.

May I bring to the notice of your readers the circumstances of the following case as indicative of some difficulties in the way of teaching modern languages by the New Method, in the hope that it may evoke some practical suggestions. A friend of mine was appointed Modern Language Master on the New Method at a certain grammar-school which educates one hundred boys and where the standard of work sadly needed raising. On his arrival he found that modern languages had, if possible, been neglected even more than other subjects. The lowest forms taking French were II. and III., for whom my friend decided upon a laborious course of phonetics and conversation from such books as those of Rippmann, or Curtis and Mack, but when he came to forms IV., V. and VI., his task assumed colossal proportions. The effect of years of bad teaching on the old lines was visible everywhere, but the forms were expected to be up to locals and matriculation standard. Any attempt at starting the "New Method" with such material was obviously sheer waste of labour apart from the necessity of examination preparation. My friend soon resolved to prepare the forms as efficiently as possible for examination and at the same time try to instil a love of good French books. But in course of time my friend will have to introduce the "New Method" into the middle and higher forms and so use it throughout the school.

The prospect certainly looks appaling, but my friend, being an old hand, will probably know how to spare himself with reason. The physical strain of teaching on the "New Method" is so clearly recognised in Germany and other countries on the Continent that a teacher is rarely, if ever, called on to do more than eighteen or twenty hours per week of this exhausting work; it is only in England that we have the edifying spectacle of a man called on to teach on the "New Method" for thirty or thirty-two periods per week, with the obvious result that unless he be of unique stamina he is compelled to spare himself somehow or other. The moral is clear. Even in a school of a hundred boys there must be at least two qualified "New Method" teachers able so to arrange the work that one takes up at the point where the other leaves off. Until headmasters and inspectors realise this necessity there must, I fear, be muddle.

S. W.

Historical Debates in Preparatory Schools.

"We shall all be agreed that history is not a mere narration of facts in their chronological order; but that to know it is to know events in their true causes and connection, to have one's judgment exercised about the right and wrong of human actions as well as the sequence of events, and to recognise some principles underlying the mere facts."[1] It will not be any one's statement of fact to say that some such thought as this underlies the purpose of every earnest teacher of history. If so, what better means than an open discussion could be devised to bring home the cause and connection of a great event or the right and wrong of a great man's actions? Supposing that such a conclusion is granted, the question at once arises as to whether the mind of an average boy at a preparatory school is capable of so grasping the *pros* and *cons* of even a simple historical subject as to be able to debate on it. Writing from experience, the answer seems to be, if left absolutely to himself, "no," but with help, considerable help perhaps, "yes," for debates can be made interesting and invaluable adjuncts to the history lessons of the year.

[1] "Lectures on Teaching." J. G. Fitch.

The only system of which I can speak from personal knowledge allows for four debates in the year, two in each winter term; the subjects discussed are always taken from the period which the school is studying, and the actual debate is held on a Saturday evening, masters and boys alike being present. The speakers, frequently including one or more of the masters, number from ten to fourteen, and the discussion lasts an hour and a quarter or a little more. The method employed in preparing for them is briefly as follows. A subject is chosen some time previously, and a week before the debate one history lesson, given to the top two classes together, is devoted to cover, as far as possible, the whole question; intending speakers are then asked to decide upon which side they would prefer to speak. Usually there is so much competition for the honour that the two junior members have to be selected by ballot, the unsuccessful competitors sometimes avenging themselves by voting against their more fortunate rivals, regardless of their former opinion. After the sides have been decided each boy is asked out of school hours by the master who manages the debates, the time varying from half an hour to about fifteen minutes with the smaller boys. In this time a general sketch of the speech is given to each individual, and every point is carefully explained to him, the boy being allowed to take down rough notes of what is said to him. The actual wording of the speeches must be the work of the speaker himself, and he is always encouraged in every way to seek out fresh ideas or apt illustrations or quotations. Each boy is told the rough outline of the argument of the preceding speaker, and warned of the points on which he is most likely to be attacked.

A debate conducted on such lines as these is naturally open to many objections. There is, and there must be, with such a system in vogue, a certain air of artificiality, not very marked, but still existing; but this, the most formidable charge that can be brought against the plan, hardly affects it as a means of teaching history. Mistakes naturally are not of infrequent occurrence, but are generally noticed by the opposing side, and the attention of the House called to them. This alone is surely a strong argument in favour of the utility of the practice. With the school as a whole debates are certainly popular. The smallest boys sometimes find them dull, but wherever possible maps or blackboard plans are shown by the chairman to illustrate what is being spoken of. The masters and older boys thoroughly appreciate the better speeches, and find amusement in the flashes of humour which often enliven the proceedings. "Before saying anything about Clive, I will tell you the story of his life," were the rather startling opening words of one young speaker, whilst another, referring to the callousness with which Mary Stuart heard the news of the death of Lord Darnley, described her as "sleeping in bed eating an egg;" and, in fact, instances of such slips might be indefinitely multiplied.

But if "interest" is the first condition of successful historical teaching,[1] and few will be found to disagree, debating supplies it in a way that few other methods can hope to compete with. It takes a good deal of trouble, and necessitate the giving up of many hours of leisure on the part of the master who manages them, but he has his reward. The boys are able to go a little more deeply into the lives of great men than would otherwise be the case; they learn to see that every question has two sides, and so begin to feel that broadening influence which should be the first fruits of an intelligent study of history. The difficulties in the way are many, but they can be overcome, and even if the speeches are not always of a high order, or the historical knowledge perfectly accurate, the increased interest and keener work of the boys far outweighs such disadvantages.

G. BING.

1 "Special Report on Educational Subjects," vol. vi., p. 217.

Nature-Study on Holidays.

MANY of your readers will have heard, if they have not actually taken a share in, the work of the Co-operative Holidays Association. The members of this association are a vigorous and ever-growing community who believe in fresh air, plain diet, and active exercise; excursions combined with a friendly social spirit of brotherhood which makes the annual holiday a refreshment both to the spirit and body. Many teachers avail themselves year by year of these opportunities, and in their interest especially the association has just made definite arrangemects at one centre (the Abbey House, Whitby) to help teachers to study nature out of doors. Miss Mary Simpson, of the Yorkshire College, Leeds, will act as lecturer and guide to the party, and under her leadership those who enter upon the course will have experienced direction. It is not intended to confine their Whitby centre wholly to teachers during the fortnight of the course, for the co-operative holidays are intended to unite all classes of society, and teachers are all the better for meeting on the holidays with those who do not teach, and quaint old Whitby, with its great stretches of moorland and lovely river scenes, affords an ideal centre for nature students, especially such who wish to combine holidaying with a little quiet work.

Further information may be had by sending a stamped addressed envelope to the Corresponding Secretary, the Abbey House, Whitby.

J. J. F.

MUTUAL AID.

THE object of these columns is to afford teachers the opportunity of asking questions of and giving assistance to colleagues. The questions received to which replies are solicited will be printed first; following these will be the answers which have been sent in, and, to make such replies intelligible to all readers, they will be accompanied by the question. Readers are invited to send answers to any of the questions asked below by our correspondents.

The questions should deal only with educational matters, using the expression in a broad sense, and the publication or otherwise of any question must be left entirely to the discretion of the Editors.

Questions and answers should be addressed to the Editors of THE SCHOOL WORLD, St. Martin's Street, London, W.C., and should be accompanied by the full name and address of the sender, though not necessarily for publication. Each question or answer should be on one side only of a separate sheet of paper.

QUESTIONS.

A. J. W. Can anyone supply me with information dealing with the status of assistant-masters in secondary schools in the South African Colonies? Is the supply of qualified men short of or in excess of the demand? What is the standard of remuneration?

K. C. Has any cheap book been published of illustrations of logic—syllogisms and fallacious arguments principally?

QUESTIONS WITH ANSWERS.

K. C. *Is there any good book of examples on Geometrical Drawing? Most of the books I have seen have few examples, and though, of course, one can invent them for oneself, it is more simple to have them already made up.*

E. STEWART. "Practical Plane and Solid Geometry." By

I. H. Morris and J. Husband. (Longmans.) 2s. 6d. "Geometrical Drawing and Design." By J. H. Spanton. (Macmillan.) 2s. 6d. "Examples on Geometrical Drawing." V. Le Neve Foster. (Eton College Press.) 3s. 6d. net.

I. W. *Will some teacher give an Australian reader the scope of the French and German required of external candidates for the B.Sc. (pass) examination of the University of London?*

DR V. PAYEN-PAYNE. The French and German required for the B.Sc. pass at the University of London consists of translating into English a portion of a scientific work from each language.

B. C. *How can the following equations be manipulated, to give the values of x, y, and z, which are clearly (by inspection), 1, 2, and 3.*

$$5x + 6y + 3z = 26$$
$$4x + 5y + 2z = 20$$
$$3x + 4y + z = 14$$

J. M. CHILD. The equations are only equivalent to *two* equations, the second being obtained by the addition of the equals in the first and third and subsequent division by 2. *Hence solution is indeterminate.*

Solution in positive integers. Eliminating z from second and third equation we get

$$2x + 3y = 8.$$

This may be solved by methods given in any text-book on algebra, or graphically.

J. P. HINDLEY. The difficulty lies in the fact that the three equations are not independent. From (1) and (2) by subtraction $x + y + z = 6$. Taking this from (2) we obtain (3). Thus (3) is a necessary corollary from (1) and (2) and ∴ the condition for unique solution—3 independent equations for 3 unknowns—is not satisfied. By elimination of (3) with (1) or (2) we have $2x + 3y = 8$. Take any values of x and y satisfying this equation, and by substitution of these values in any one of the original equations a suitable value of z can be obtained.

W. A. WHITTON. The equations cannot be manipulated to give a definite solution; they are not three independent equations, for (ii) is obtained by adding together (i) and (iii) and dividing the result by 2. Certainly $x = 1, y = 2, z = 3$, are values which satisfy; but so do $x = -\frac{1}{2}, y = 3, z = 3\frac{1}{2}$, and $x = -2, y = 4$, and $z = 4$, and any number of values could be obtained for a y, z, which would satisfy the equations.

A. C. J. These equations are not independent.

Thus: $8x + 10y + 4z = 40$ from (ii).
$5x + 6y + 3z = 26$ „ (i).
Subtract $3x + 4y + z = 14$

Equation (iii) can be derived from equations (i) and (ii), and hence will be satisfied by any value of x, y, and z, which satisfy (i) and (ii); these are of course infinite in number. Eliminate z from (i) and (ii), it follows that $2x + 3y = 8$, consequently the only sets of positive integral values are (1, 2, 3) (4, 0, 2).

L. M. I. *I shall be grateful if anyone can give me the name of some book dealing with metre of Shakespeare, especially in reference to "King Lear."*

W. E. STEBBING. The whole subject of English metre is fraught with difficulty at present on account of the conflict between those who base everything on classical usage and try to approximate even blank verse to hexameters, and those who adopt what may be called the musical theory of it. Shakespeare's verse has, however, been much discussed and critically examined with a view to find evidences of date, &c., from it. No special book exists upon the subject, English or Am but the best reference is to Prof. Herford's "Outline of speare's Prosody" (Richard II., Warwick Shake (Blackie), 1s. 6d.; Dr. E. Abbott's "Shakespearean mar" (Macmillan), 6s.; and Dr. Furnivall's Introductio "Leopold" Shakespeare. A German book of some v Prof. Schipper's "Englische Metrik."

S. R. *Will you kindly give me a word or two respecti Photographic Survey of the Heavens, which I believe w pected to be completed about three years ago. Has it completed?*

R. A. G. The scheme for the preparation of an astro catalogue and chart was considered at an internationa ference of astronomers in 1887. It was decided to w such a scale that 11,000 plates would be required to co sky, and this number was to be repeated four times, twi short exposures (of 6 mins., 3 mins., and 30 secs.), and with long exposures (40 mins.). The position of stars plates of the first series (catalogue plates) were to be me and the measures printed and published; those of the series (chart plates) were to be reproduced in fac-simile. about one-fifth of the work has been accomplished, and i to be improbable that the original programme will be out. For further information as to the position of the prise, see an article by Prof. H. H. Turner, in *Nature* 17th, 1902, (vol. lxvi., page 273).

T. S. *Are the Irish Statutes of Charles I. procura Government publications? If not, how may they be obtai*

A. J. EVANS. Irish Statutes, revised edition, printed by Eyre and Spottiswoode, under authority of t Government, contains twenty-three of the eighty-six passed in Charles I's. reign (or at least parts of them) itself based on the edition of the full text of all Irish S 1310-1800, contained in twenty volumes published ea century. The book covers the same period and con some 850 pages. Whether it is still procurable I do not

C. E. F. *Where can I find an account of Perry' Rule, which is a new invention using log. log. scale?*

J. PERRY. The maker of the rule is Mr. A. G. Th Paragon Works, King Street, W., Manchester. I ordinary slide rule, and also it computes a^b where a an any numbers.

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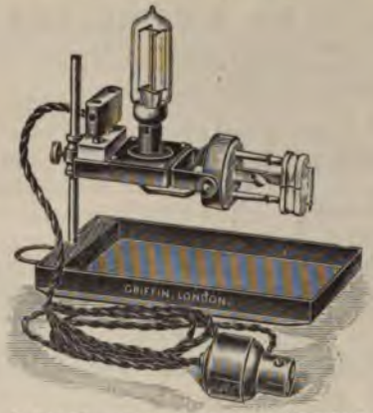

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"'Look out in the Black Forest,' they said, 'and don't let any men come near you. Challenge them at fifty yards, and warn them to stand off.'

"'And if they still come on?' I said.

"'Then fire upon them, was the reply.

5. "We came upon the gang suddenly in the Black Forest. They were about fifteen in number, but seeing that we were on our guard, they did not attack. We saw nothing more of them until one night when we were camped upon the Goulburn.

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The School World

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JULY, 1904. SIXPENCE.

TIONAL CODE OF PHYSICAL TRAINING.

By C. E. SHELLY, M.A., M.D., &c.
ulting Medical Officer, Haileybury College.

:E is a certain grim satire in the fact that se nations which boast of the most vanced civilisation should be showing the oncern in devising measures to counteract rating effects upon the physique of the the same time, there is ground for hope nsideration that legislative measures to could be possible—and effective—only ney are the outcome of a general awaken- need of such action on the part of the large. The Inter-departmental Com- which was entrusted the duty of deter- what extent and along what lines the urse now in use in public elementary ould be modified or supplemented, may tulated upon the result of their labours. ort is really interesting reading; clear, nsive, and concise; and the introduction efaces the syllabus of physical exercises studied with advantage by all who are in the subject of education, for it affords nt summary of the principles which form ific basis of physical culture, and of the which cannot be ignored if those prin- to be successfully applied to the bodily required of school children. The scheme es laid down is sufficiently definite, but is ne time so elastic as to permit of modifi- accord with local needs or limitations, its of such variation as the conditions of s or the ability of the teacher may sug- d, indeed, provision is made for the intro- -tentatively in the first instance—of supp- ry details, should the teacher feel that desirable. The actual exercises recom- do not precisely follow any special ," but necessarily include exercises com- many well known courses of physical

It is not recommended that the syllabus by the committee should at once sup- se schemes which are already approved e in elementary schools; nor would this able; but it is expected that existing will be modified without unnecessary delay, so as to bring them into line with the new official one.

Dealing, as they do, with the children of elementary schools, the report and its syllabus begin at the beginning of the subject. The object in view is to lay down a minimum, but a sufficient minimum, of physical exercise for children of the ages specified, under normal conditions. The approved syllabus provides a classified reference list, as it were, of a considerable variety of courses. The exercises have been selected on account of their suitability for children of school age; they require no special provision of apparatus. Care has been taken to exclude any exercise at all likely to be injurious to children of even weakly physique, as well as everything savouring of the purely ornamental or which is not of distinct value from either the "physical" or the "educational" point of view. The latter quality—that of training the nerve-centres involved to respond to a specific stimulus (*e.g.*, word of command) with alertness, decision, and control—belongs to all exercises in a certain degree and at a certain stage; in learning to use a knife and fork no less than in learning to walk, to dance, or to ride a bicycle, certain complex co-ordinations of muscular movements are involved, which require, for their proper accomplishment, carefully repeated exercises of the will and of the memory as well as of the nerve-centres immediately concerned. A certain amount of fatigue accompanies the earlier practice of all movements of this class, and this fatigue will be shown most and earliest in proportion as the structures called into action are immature and sensitive. But a certain amount of somatic memory is stored and added to by each successive repetition of the exercise, which thus itself grows less tiring until it becomes practically automatic. At this point the education of the nerve-centres involved is complete, and is not increased by any further repetition of the exercise. But the continued practice of the exercise thus mastered still possesses a "nutritive" effect, by serving to maintain the bulk and potential activity of the parts involved. Hence, as a means of physical training, one and the same exercise may be used for two purposes quite different—for its "educative" effects during the time of learning, or for its "nutritive" effect when it has been mastered. And this distinction is of primary importance in determining the times at which and

the manner in which any exercise should be imposed, having regard particularly to the varying extent to which fatigue is produced in the two sets of circumstances.

Hence the recommendation that at stated intervals, twice or thrice a week, there should be exercises given and treated as formal school lessons—unfamiliar things to be learned by repeated efforts; necessarily involving fatigue, and therefore to be carried on only for a reasonable period of time; and to be regarded by the teacher as a lesson, and not as a relief or set-off to other educational work. But when certain simple exercises have once been mastered, they (no longer entailing the fatigue inherent in the learning of them) are to be practised daily, for their nutritive effects upon the respiration and the blood and lymph circulations especially. These should be exercises of a kind which can be performed quickly and without mental effort, and should be carried out in the class-room several times daily for two or three minutes at a time. Thus used—as in breaking up a period of continuous confinement to the class-room—their effect, though transient, is in the truest sense recreative.

A useful caution is given as to the way in which music can be used so as to mar the educative effect of physical exercises carried out to its accompaniment. Music, in fact, should not be used as an adjunct to exercises which *are being learned*. Acting as a rhythmic stimulus, it to some extent replaces the need of will effort; thus, while saving fatigue in a certain degree, it detracts from will-training in muscular movements and by so much diminishes the educative value of such exercises. For infants, whose exercises should be almost exclusively of the "nutritive" type, music is generally permissible, in virtue of its use in diminishing fatigue. But it should not be employed with the older children, except in conjunction with exercises with which they are already familiar—such as marching, which is chiefly nutritive in value.

The recognition of certain physical disabilities, chief amongst which stands "nasal" breathing—and deafness, which so often indicates a cause allied to that frequently responsible for "mouth breathing"—(a term preferable to "nasal" breathing, because it is truly descriptive of the condition present), to say nothing of generally defective nutrition due to lack of sufficient or of proper food, is imperative on the part of the teacher. And the teacher must not only possess an intelligent mastery of the principles involved in the physical training of the young, but must also take a hearty personal interest in carrying out the work successfully. The Committee has not been blind to the magnitude of the position thus opened up. "It has been forced upon them," they say, "that, important as the question of physical exercise for schools is in itself, it is only part of a much larger question, viz., that of school and personal hygiene." They indicate that among the children *attending* the elementary schools there is a certain *number who must be,* at times or altogether, excluded from participation in the (not ex forms of physical exercises recommend general use; and they point out that "mere sion is not enough." The most admirabl devised with scientific accuracy and admir with the most intelligent willingness in the will not succeed in making bricks without or in evolving a well developed man or wom of the starved child. The remedy does no the hands of the teacher; but the teacher be equal to at once recognising the co which calls for a remedy, and there sho means for providing the remedy "if a rem possible." Those clauses of the report in this aspect of a very serious difficulty is to adumbrate measures of grave importanc one with any practical knowledge of educa a national question—of its vast importance whole community, and its illimitable possi for good or evil, of the responsibilities w entails and the burdens which it imposes—is to minimise the importance of securing ad intelligence and training for the teaching Of no less importance is a satisfactory solu the question of how to deal with the ur children who form in some cases a consid proportion of those attending many elem schools. And then, too, there is the ma school buildings and school plant.

With the first two matters just alluded Report deals in a fashion which must cor itself to the intellect of the experienced manager, while it flutters the financial con of the harassed "local authority." "Ever of insufficient feeding or constitutional we ought to be reported without delay to th authority, in order that the local authority m once take steps to investigate the circums and apply a remedy, if a remedy is possibl is clear that the decision as to the exclus children unequal to the physical demands c cational training must be made in the first in by the teacher, on his or her individual res bility; and while it may be found that, of ex teachers, the more experienced are able to such a discriminative selection without diff it is admitted that no more than a propor the existing teaching staff can fairly be ex to be equal to the adequate discharge of s duty. To meet this initial difficulty, it is r mended, in the first place, that for the "suitable instruction in the laws of health the outward signs of physical and mental ness" should be accorded, in the general s for the training of school teachers, a position more prominent than has hitherto been allot it. It is, moreover, pointed out that fo purpose no mere book-work instruction, s may suffice for passing written examinati physiology and hygiene, will suffice: the instr must include a certain amount of practical v the recognition of normal conditions of physiq nutrition, and of the deviations from this sta including familiarity with the signs of f physical and mental, as well as with those

indicate defects of sight, hearing, respiration, and the like. The requisite knowledge must, in fact, be founded on a course of, "so to speak, clinical experience." The utmost secured by such knowledge will not, however, enable the teacher to do more than make a preliminary selection of those cases which obviously suggest the need of further investigation. This last can be made only by fully trained medical men who have made work of this kind a speciality, and provision for the systematic reference of questions of school hygiene and the special treatment of individual scholars by medical experts is held to be essential to any complete form of educational organisation. Further, while refraining from any revolutionary or hurried attempts at reforming the existing staff, the committee urge the formation of a class of specially trained "instructors" or "specialist teachers," to whom would eventually fall the duty of regularly carrying out the provisions of the code of physical training, in the larger schools, at all events, and of supervising the teaching given in the smaller schools, which might be suitably grouped for the purpose of benefiting by this more specialised instruction.

The emphasis which is laid by the committee on these points contrasts with their almost tender solicitude for local susceptibilities in regard to others which they deem of less primary importance. Essentials are to be secured and fatal deficiencies remedied "as speedily as possible"; but "for the rest, the demands of inspectors in the matter of physical exercises should be carefully proportioned to existing facilities." Admitting the principles expounded in the Introduction to their Report, the position thus taken up is a logical one. Now that the State has made education compulsory, it is to the interest of the State that the education provided shall be a truly combined training of mind, body and character; and it is in no less degree the interest and duty of the State to see that the children whom it gathers round its knees for that purpose are in such a condition of physical health as to profit by the education it insists on providing for them. The evils incidental to child-life in urban districts are certain to be aggravated by imperfect and defective "teaching" carried out in schools ill-lighted, ill-ventilated, and overcrowded; while the opposite of all this can do much to make up to the town child for the loss of the free and open-air life enjoyed by its country-bred contemporary. Again, though intelligent instruction in healthy schools can only partially counteract the influences of the squalid home, it must help materially towards the development of a generation more open to the attractions and better versed in the essentials of a life at once more healthy, more useful, and more orderly. The potential "hooligan," under the wisely directed influence of suitable physical training and exercise, can be educated into becoming a valuable member of society; and the half-starved children for whom "the local authority" has secured both a serviceable training for life's battle and the physical means of utilising that instruction are not likely to prove, in any sense, a bad investment for the nation.

The need for ample playground space is insisted on, and it is pointed out that a hall or unoccupied class-room in which the systematic lessons may be carried on from week to week without interruption from the weather is also an indispensable part of the equipment of every school in the uncertain and varying climate of this country. It would be extremely difficult to make this provision in the case of many individual schools; but, as was indicated in the Report of the Commission on Physical Training (Scotland), there are advantages attaching to the institution of separate places of recreation which can be made to serve as a common meeting-ground of groups of schools for this purpose. During all exercises, and especially during the few minutes of daily exercises, doors and windows should be widely opened: although "these exercises should never be omitted because for any reason that condition"—the flushing of the room with as much fresh air as possible—"cannot be fulfilled." We confess, however, to reading with some misgiving one of the few *obiter dicta* appended to these directions: "With proper nasal breathing, any atmosphere that is good enough to live in will be good enough to exercise in." In a limited sense, this may sometimes be admitted. But it must never be forgotten that, in the case of children, any active exercise means the formation and discharge of peccant waste material to a degree relatively much greater than in the case of adults; while children are more susceptible than they to the effects of continually re-breathing an atmosphere thus polluted. And all those who realise the relations which obtain between numbers, floor space, and ventilation in most of the existing elementary school and class-rooms must regret a statement which, made with such authority, may be quoted to justify the perpetuation of conditions providing an atmosphere perhaps just "good enough to live in" while the pupils are at rest, but certain to become unduly fouled by even a short period of moderate exercise.

The Making of English. By Henry Bradley. 245 pp. (Macmillan.) 4*s.* 6*d.*—This is one of the most interesting books that has fallen into our hands this long time, and every teacher of English ought to make haste to possess and study it. Mr. Bradley's labours as one of the editors of the great Oxford Dictionary are well known, as are also his services to science as president of the Philological Society; but there is a sense in which it may be said that this little book outweighs them all, for it puts an immense amount of valuable philological matter in a form so attractive that, once begun, the book cannot easily be laid down. The author speaks as one conscious of faults in his book; the great fault of such works cannot be charged against it. It is never anywhere dry. Readers who are but beginners in philology, or merely interested in an amateurish way in English, will find no difficulty in following Mr. Bradley, or in obtaining clear views and an enormous amount of information about the development of the English tongue in its practical and historical aspects. The last three chapters on Wordmaking, Changes of Meaning, and Some Makers of English, are fascinating.

DIMENSIONS OF PHYSICAL QUANTITIES.

By PROF. ALFRED LODGE, M.A.
Royal Indian Engineering College, Coopers Hill.

CERTAIN very important matters in connection with the expressions that are met with in geometrical and mechanical investigations deserve more careful attention than is usually given to them. Students are very slow to perceive that expressions or formulae denoting quantities of particular kinds must be of the right dimensions, and that their dimensions can be determined by mere inspection of the expressions themselves. By the dimensions of a physical quantity, its quality or kind is meant: not how much there is of it, but what kind of thing it is. Students ought to realise that such an expression as πr^2, or $4\pi r^2$, must denote an *area*, and that $\frac{4}{3}\pi r^3$ must denote a *volume*. They ought to be less able to make a mistake as to the kind of quantity represented than to make a false concord in their classics. The following is an attempt to illustrate what is meant, touching only on well-known and fairly simple ideas.

Some concepts are fundamental, and cannot be expressed in terms of simpler conceptions. Such are length and time, and a few others.

On the other hand, such quantities as area, volume, velocity, acceleration, &c., are estimated in terms of simpler magnitudes. Thus, an area is represented by the product of two lengths, a volume by the product of three lengths, velocity is obtained by comparison of length with time, and may be considered as the ratio of length to time, and so on. We may therefore say that the dimensions of area are $(length)^2$; the dimensions of volume are $(length)^3$; those of velocity are *length* ÷ *time*, while acceleration has the dimensions velocity ÷ time, which we permit ourselves to express as *length* ÷ $(time)^2$.

In theoretical mechanics *mass* is treated as a fundamental conception, while "force" is thought of as of the dimensions *mass* × *acceleration*, *i.e.*, mass × length ÷ (time)². In engineering, on the other hand, *force* is considered as the fundamental quantity, and mass is thought of as of the dimensions *force* ÷ *acceleration*.

What it is desired to lay stress on is that the expressions denoting any of these quantities bear on their face the impress of their quality or dimensions, and that students should be taught to perceive this.

There is a further distinction between physical quantities which can also be seen in the expressions which denote them: viz., that some, such as length, area, force, are directed quantities, or vectors, while others, such as volume, mass, time, are non-directed quantities, or scalars. In the case of directed quantities, the formulae or expressions denoting them will in all cases indicate their *direction* as well as their dimensions; in fact, the direction of a vector must be considered as being part and parcel of its quality or dimen all of which is necessarily indicated by the fo the expression which represents it. This w illustrated below.

Lastly, if in a physical or geometrical equa number of terms are added together, or subtr or equated, they must all be of the same d sions, and in particular, if they are vectors, must all point in the same direction; or at if this is not the case, the equation may be sp into a number of *independent* equations in whic rigid law will hold.

This may be illustrated first by the equat a straight line in terms of the intercepts o axes, viz.:—

$$\frac{x}{a}+\frac{y}{b}=1.$$

The right-hand side is a mere number, a investigation it will be seen that so are the on the left; for x and a are *parallel* lengths, ratio is a mere number, and so are y and b.

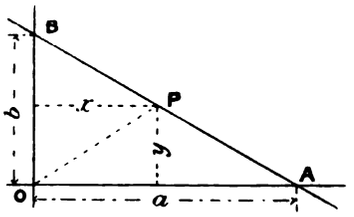

FIG. 1.

Now take the same equation in the $bx + ay = ab$. Here, the term bx is the prod two lengths, whose directions are at right an the axes are rectangular, in which case bx d the *area* of a rectangle of base b and hei Similarly ay and ab are *areas*. These areas the same plane, and consequently are entit be added or subtracted or equated. The conventionally considered as parallel ve whose axes are perpendicular to the plane therefore parallel to each other.

If we write the equation in the form

$$\tfrac{1}{2}bx + \tfrac{1}{2}ay = \tfrac{1}{2}ab$$

we are asserting that the sum of the two tri OPB and OAP in the above diagram (Fig. equal to the triangle OAB. If the axes ordinates are not at right angles, the rel between the areas of these triangles would

$$\tfrac{1}{2}bx \sin\omega + \tfrac{1}{2}ay \sin\omega = \tfrac{1}{2}ab \sin\omega.$$

This brings us to an important point in conn with areas, viz., that an area can be obtaine by multiplying two lengths which are mu perpendicular. This is laid stress on in me tion, but is liable to be lost sight of in trigonom but it is universally true nevertheless. Th a, b are two adjacent sides of a parallelo containing an angle ω, either the base is a an perpendicular height is $b \sin\omega$, or the base and the height is $a \sin\omega$. In either case the

n ω, is the product of two mutually perpendicu-
engths.
milarly, the area of the triangle whose sides
, b, and included angle ω, is half the product
e base into the perpendicular height, *i.e.*, =
in ω, or $\frac{1}{2}b.a \sin \omega$.
w suppose a, b, are lengths measured along
me line or along two parallel lines, what does
present now? Strictly speaking, not an area
, though it is of the right dimensions (except
ards directions), viz. (length)^2. If we rotate
f the lengths through an angle ω, $ab \sin \omega$
e the area of a parallelogram, whose sides
, b in length and direction. The vector
enting this area may be directed how we
by merely altering the plane in which we
one of the lines. If the angle ω is zero,
s no area. We can only look on this product

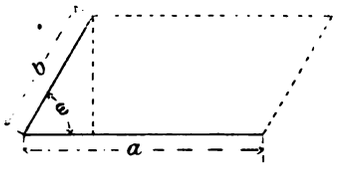

FIG. 2.

llel lengths as a *scalar* quantity of dimensions
)^2. A number of such scalars admit of
n, even though their lines are differently
d. Perhaps the simplest illustration is the
a expressing one side of a triangle in terms
other two sides and the included angle, viz.,
$+ c^2 - 2bc \cos A$. In this formula a^2, b^2,
are obviously products of pairs of parallel
ther, coincident) vectors; and the product
A will on examination prove to be the same,
os A is the projection of c along b; or, we
we like, take the factors as $b \cos A$ and c;
er case the product is evidently a scalar
)^2 like the others.

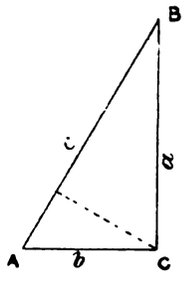

FIG. 3.

ourse in such a case we may forcibly turn
the factors of *each* product through a right
and then prove the equality that exists
the resulting squares and rectangles; in fact,
this way that Euclid i. 47 is proved. But
mula, though *proved* by means of areas, is
lly *used* for numerical calculations of the
of sides; it has no intrinsic connection
reas.
have in the above examples incidentally
the different effects of sin A and cos A as multipliers of a length. If in a right-angled triangle ABC (Fig. 3) we multiply the hypothenuse c by cos A, we obtain the base b, which is the projection of c on to the base. If we multiply c by sin A, we obtain the perpendicular a—*i.e.*, the two products $c \cos A$ and $c \sin A$ are perpendicular to each other. On the other hand, if we take the two sides b, a initially at right angles, and multiply one by cos A and the other by sin A, we shall obtain similarly directed vectors which may be added together. In fact, the hypothenuse c is made up of the sum of $b \cos A$ and $a \sin A$. If we multiply b by tan A, we obtain the perpendicular a, *i.e.*, the effect of tan A used as a multiplier is to obtain a perpendicular vector. This effect of the tangent of an angle is well exemplified in the formula $y = mx + c$. Let us for simplicity consider x as horizontal and y as vertical. In this equation y is a vertical length, and so is mx, and so also is c. In fact, they would not come into the equation unless they were all similarly directed. The way in which mx is vertical, though x is horizontal, is worth studying. The factor m is the gradient (tan θ) of the line, and is therefore the ratio of a vertical length to a horizontal (so many feet vertical to so many feet horizontal). Hence the nature of mx is shown by the formula

$$\frac{\text{vertical length}}{\text{horizontal length}} \times \text{horizontal length},$$

which, on cancelling, leaves a vertical length as the result.

The equation $r = a \cos \theta + b \sin \theta$ well illustrates the importance of thinking of directions. Since $a \cos \theta$ and $b \sin \theta$ are added together, a and b must themselves be at right angles. Take, then, OA horizontal $= a$, and AB vertical $= b$, and draw a line OP at any angle θ with OA, of length equal to the sum of the projections of a and b upon it. Then $OP = a \cos \theta + b \sin \theta$, *i.e.*, $OP = r$. It is easy to see from this that the locus of P is a circle having OB as diameter.

The equation $x \cos \alpha + y \sin \alpha = p$ is similar in character as regards the directional qualities of the lengths involved. In fact, statically, the two equations are the same. The difference between them lies in the selection of the *variables*.

The dimensions of the circular measure of an angle, *arc* ÷ *radius*, are worthy of study. It is of zero dimensions, but is yet not a pure number, for it will be noticed that the arc is everywhere perpendicular to the radius. An angle is therefore the ratio between two mutually perpendicular lines. Its effect is somewhat similar to that of the tan of an angle, but not quite so simple, as neither arc nor radius have any definite direction. Perhaps the easiest way is to consider a finite angle as made up of the sum of an infinite number of little bits given by the equation $d\theta = \frac{ds}{r}$, where certainly ds and r are perpendicular to each other.

Now consider a mechanical problem. "A ball is thrown with velocity V in a direction inclined at an angle α with the horizon: determine its horizontal range."

The vertical velocity is V sin α, initially, and at time t is V sin$\alpha - gt$. The expression gt is vertical acceleration × time

$$= \frac{\text{vertical length}}{(\text{time})^2} \times \text{time} = \frac{\text{vertical length}}{\text{time}} =$$

vertical velocity as it should be. The vertical velocity will be zero at the highest point, and will be − V sin α at the point where the ball again reaches the horizontal plane; hence the time of flight will be given by the equation V sin $\alpha - gt = -$ V sin α, whence $t = \frac{2V \sin \alpha}{g}$ which is of dimensions *vertical velocity* ÷ *vertical acceleration* whose ratio is of "time" dimensions as it should be.

The horizontal velocity, V cos α, multiplied by this time, will give the required range, viz.,

$$\frac{2\,V^2 \sin \alpha \cos \alpha}{g},$$

the dimensional expression for which (thinking of $V^2 \sin \alpha \cos \alpha$ as V sin α × V cos α) is

$$\frac{\frac{\text{vertical length}}{\text{time}} \times \frac{\text{horizontal length}}{\text{time}}}{\frac{\text{vertical length}}{(\text{time})^2}}$$

in which time cancels out, and so does vertical length, leaving horizontal length as the result.

We may state this symbolically, if we please, in the following briefer form advocated by Prof. W. Williams, of Swansea, using Y for vertical length and X for horizontal length, viz.,

$$\frac{Y/_T \times X/_T}{Y/_{T^2}} = X$$

The essential distinction between the product of two parallel lengths and the product of two perpendicular lengths is well illustrated by the distinction between the work done by a force and the moment of a force. One is scalar, as in it the force is multiplied by a length in its *own* direction, with dimensional formula

$$\frac{\text{mass} \times \text{length}}{(\text{time})^2} \times \text{parallel length, or } \frac{M\,L^2}{T^2}$$

The other is a vector, the force being multiplied by a length at right angles to its line of action, represented by the formula

$$\frac{\text{mass} \times \text{length}}{(\text{time})^2} \times \text{perp. length} = \frac{M\,X\,Y}{T^2}.$$

In this connection we may take an illustration showing the directional effect of an angle factor: If a rope wound round a pulley of radius a is pulled with a force F, its moment round the axis = Fa. If the pulley rotates through an angle θ, the work done is F$a\,\theta$. Here Fa is a vector, but F$a\,\theta$ is a scalar, the lengths a and $a\,\theta$ being mutually perpendicular, so that though a is perpendicular to F$a\,\theta$ is along F's line of action.

The question will no doubt arise as to how soon the notion of dimensions should be brought to the notice of pupils. I think in easy cases some teachers would find they could interest fairly young *pupils long before* they venture into the regions of analytical geometry or mechanics. Thus, to borrow an illustration from my brother's review of M. Turnbull's "Arithmetic" (The School World, 1903, p. 412):

"If 47 boys are to receive 5 nuts each, how many nuts are required altogether?"

The answer is:

$$47 \text{ boys} \times \frac{5 \text{ nuts}}{1 \text{ boy}} = 235 \text{ nuts}$$

The quotient $\frac{5 \text{ nuts}}{1 \text{ boy}}$ is very interesting; it may be called a distributive quotient, indicating the scale of distribution, being read as "5 nuts *per* boy."

The same question might have been set thus: "If 235 nuts are distributed equally among 47 boys, what will each receive?" *or*, "what will be the scale of distribution?"

Answer:—

$$\frac{235 \text{ nuts}}{47 \text{ boys}} = \frac{5 \text{ nuts}}{1 \text{ boy}}.$$

Of course if the distribution is not "equally," the answer $\frac{5 \text{ nuts}}{1 \text{ boy}}$ is merely an *average* result.

To take an exactly similar question: "If a cyclist rides 235 miles in 47 hours, what is his average rate?"

Answer:—

$$\text{Rate} = \frac{235 \text{ miles}}{47 \text{ hours}} = \frac{5 \text{ miles}}{1 \text{ hour}} \text{ (average).}$$

In the form of question which gives the rate and the number of hours, and asks for the distance, the sum would stand

$$\text{Distance} = \frac{5 \text{ miles}}{1 \text{ hour}} \times 47 \text{ hours} = 235 \text{ miles.}$$

Obviously this sort of treatment is applicable to any arithmetical question relating to concrete quantities. It should not be insisted on too often: just enough to keep up the interest, and to clear up difficulties as the pupil advances into harder work. It is perhaps most important in connection with mensuration, where for want of it boys so often seem unable to realise when formulæ relate to length or to area, or to volume. *Dimension* ought to become automatically obvious. It ought to be impossible to make a mistake in them.

There is one further point to which I ought probably to allude. Although in such a general equation as $y = mx + c$ every term stands out distinct as regards both length and direction, it is no longer the case when you give numerical values to m and c. Thus

$$(y - 2) = m\,(x - 3)$$

has lost in some of its terms indications of both length and direction, though of course when we come to look into the matter geometrically we shall find that 2 denotes a length parallel to y, and 3 a length parallel to x. Similarly

$$2y = 3x - 5a$$

has lost all sign of direction, and if we write it in the form $2y = 3x - 5$ it has lost homogeneity altogether, *i.e.*, in *form*. Of course, in *essence*, it is

geneous as ever: $\frac{3}{2}$ is the gradient, *i.e.*, is of ns $\frac{\text{vertical length}}{\text{horizontal length}}$. What 5 may denote vious, but we do know that, if 2 and 3 are imensions in length, 5 is a length, and in we know that $2y$, $3x$, 5, are all exactly uantities.

ll know how students shy at general s or general formulae; they so much prefer with numbers. $y = mx + c$ is hard; - 5 is all right, because they have some- y can work with. Perhaps if the subject sions is brought constantly before them sooner learn to see into, and appreciate ty of, general formulae; and may sooner important lesson that even in a question a numerical answer it may be better to n symbols as long as possible, till the final s reached which has to be evaluated, as nuch easier to avoid (or to discover and nistakes in algebraical work where the ns of the quantities are continuously in us than in a mass of numerical work ch help no longer exists. The symbols e with a new and fuller meaning, and ghts and guides instead of difficulties.

SS-WORKING FOR SCHOOL LABORATORIES.

By Rev. A. H. Fish, B.A., B.Sc.

ER the old methods of teaching there ere, as a rule, few demands for the exer- se of the art of the glass-worker by the r pupil. Stock lecture apparatus of the ttern was used in every school. It he minimum of fitting. Only with some at original work did the knowledge of ficiency come home. Now, however, h pupil is, or should be, encouraged to ent thought, there is much more opportu- dexterity on the part of teacher and

uccessive text-book shows more and more from stock patterns and methods. New s in science have brought the glass- art prominently forward, and even in y work a great deal can undoubtedly be nprove the methods and apparatus used . It is not, of course, suggested that the ught to make the apparatus used by the to teach them to make it. His time s are much too valuable. But one sees which present apparatus could be im- adapted; one desires to contrive fresh ; one often needs in emergencies to rticle which cannot be obtained without ," and consequent loss of time. And, good deal of the "fitting" in ordinary oratories could be very much improved, if teachers generally had more knowledge of glass working.

Available Books.

Undoubtedly it is advisable for the teacher to get a few lessons from an expert. But often this is out of the question. Moreover, the lessons are much more useful when the student has made some progress, and discovered the difficulties for himself. There are several good books in English on the subject, though none treating the subject from the point of view of the ordinary science-master. The following I believe, to be a complete list:—

"Methods of Glass-blowing." Shenstone. (Rivingtons.) 2s. 6d.

The pioneer book on the subject.

"Glass-blowing and Glass-working." Bolas. (Dawbarn and Ward.) 2s.

"Laboratory Arts." Threlfall. (Macmillan.) 6s.

One hundred pages on this subject.

"Glass-working." Hasluck. (Cassell.) 1s.

And I should like to add:—

"Guide pour le Soufflage de Verre." Lugol. (Paris: Gautier Villar et Fils.)

This is a French translation of the much enlarged German edition of Shenstone's by Prof. Ebert.

I advise the teacher to procure the first or second. The section on glass-blowing in "Laboratory Arts" is excellent, but the somewhat elaborate apparatus and methods described might deter the beginner. Still, for other reasons, no physical laboratory should be without Prof. Threlfall's book. The last is also excellent. In what follows I shall assume that the teacher has one of these books.

Apparatus.

If at all possible, let a separate room, however small, near the teaching laboratory be set apart for glass-working. The noise and litter which it causes are very objectionable in the laboratory. There should be a good gas supply, and some sort of stove. A sheet-iron oil stove with flat top is by no means a bad addition.

Bellows.—The ordinary rubber-bag bellows, found in most laboratories, does *not* give a suitable flame for most operations in glass-blowing, and is not nice to work. Still, it can be made to serve for many purposes, and is very useful in conjunction with a small *portable* blow-pipe. For all work except this, nothing is quite so efficient as the smith's bellows arranged as shown in Fig. 1. It takes up a good deal of room, however, and some fitting will be required. It has the great advantage that the pressure can be varied to suit the work in hand. For simplicity, compactness, and all-round convenience it must give place to one of the table-bellows made by Enfer, of Paris (Fig. 2), and now obtainable through most dealers at a cost of about £3 10s.[1]

[1] Figs. 2, 3, 4, are taken by permission from the catalogue of Messrs. W. & J. George & Co.

I have had both these arrangements in use for quite ten years, and though, as a matter of habit perhaps, I prefer the former, I always recommend the latter. I have never had the slightest trouble with it, and it is as good as the day I bought it. The beginner should be told that in using it he must "blow up" until the top of the bellows is hard against the table-top. If he now takes his foot away, he will get a steady blast lasting at least a minute. Thenceforward he just keeps this pressure up.

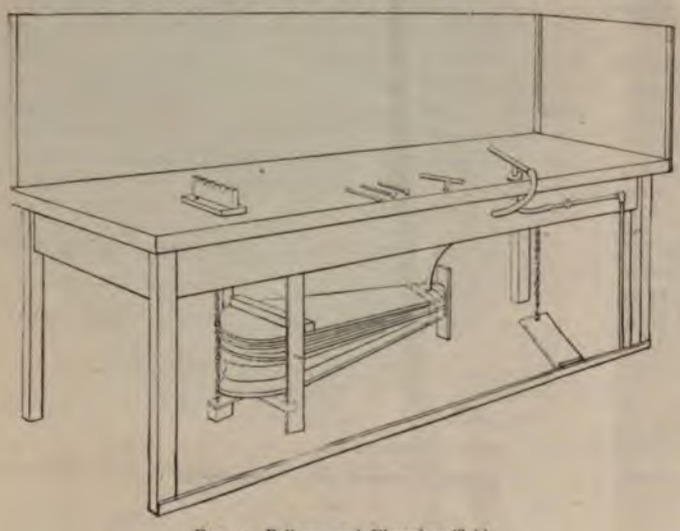

Fig. 1.—Bellows and Blowpipe Table.
Threlfall's "Laboratory Arts." (Macmillan.)

Blowpipe.—Avoid the brass forms usually sold, and get or make a glass-blower's blow-pipe, with glass jets and centering screws (see Fig. 3). This can now be bought for about 10s. 6d. Messrs. Letcher, of London, have lately put on the market an excellent change blow-pipe with three jets. They made me one with glass jets and centering screws, which is as nearly perfect as such a thing can be.

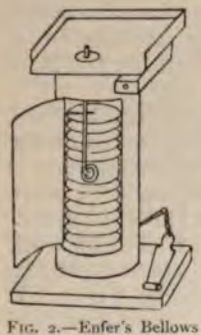

Fig. 2.—Enfer's Bellows and Table.

The teacher should, however (with the aid, if necessary, of the nearest gas-fitter), construct the simple blowpipe described by Threlfall, pp. 25-26, or Shenstone, p. 4, which is all that is used by many professional glass-blowers. A brass T-piece, a cork and glass jet, are all that are required to put together the portable blowpipe which is necessary for work on fixed apparatus.

Glass Tubing.—There is now no difficulty in getting good soda-glass from any of the dealers. If a fixed gauge, say, $\frac{3}{16}$ of an inch, be adopted for connecting tubing and adhered to, much trouble in cork boring, &c., will be saved, and a good stock of this tubing should be laid in. The next most useful size is *fairly thin-walled* cylinder tubing of *from* $\frac{1}{4}$ *to* $\frac{3}{4}$ *inch* diameter. Jena combustion tubing of about $\frac{1}{4}$ inch and $\frac{1}{2}$ inch diameter should also be stocked. A few pounds of each sort of intermediate size will be useful. In both cases avoid very thick-walled tubing. It is expensive, and not of much use except for special purposes.

Position.—See that you can sit comfortably, with foot on pedal, elbows on the table, and finger and thumb four to five inches above the level of the table. On your right side, on the floor, have a japanned sheet-iron or tin box for waste. Let the flexible tubes from gas and bellows come up through holes in the table close to the blowpipe. There should be a stop-cock, with lever handle on the blowpipe, to regulate the gas. See that it moves easily, but not too easily.

Hints on the Simpler Operations.

Cutting.—Use a file. Make each boy keep his own file. When worn grind down one side. A flat file is as good as a three-cornered one and more handy. Do not let your boys saw their glass. A single forward cut is sufficient for connecting-tubing. For the wider tubing two or three cuts—a distinct notch—followed by a bead of very hot glass is generally sufficient to effect a clean cut. Jena glass is often obstinate, and one of the circular cutters now sold is useful in dealing with it.

Bending.—A batswing burner is not now always available in the laboratory. A tube-heater gives good bends. So does the following simple plan. Lay the Bunsen on its side on a block, or over the edge of the bench, and turn the tube in the horizontal flame thus obtained.

Fig. 3.—Single Blowpipe with Centering Screws.

Small End-bulbs.—Close the tube smoothly and uniformly *before* attempting the bulb. With hard

lass, beginners find it difficult to get rid of the nall knob left by the tail. Heat just this bit in e edge or end of a hot flame and blow hard. emember here and always that thick glass takes ger to cool than thin, and, as it is nearly always

FIG. 4.—Letcher's Change Blowpipe.

thick parts that are to be expanded, let the ner glass cool a moment before blowing. In er words, take your time about blowing. A inner is always in a hurry to blow, an expert er.

BULBS AND FLASKS FROM TEST-TUBES.

s raw material on which to start, I recom- d test-tubes 5 in. by $\frac{1}{2}$ in. or 6 in. by $\frac{5}{8}$ in., of d quality. Quite a number of useful pieces of aratus can be made out of these; the waste is small, and the process furnishes just the ctice and experience which are needed.

irst fit a good cork of nearly uniform section he test-tube. Now bore the cork as axially

FIG. 5.—Position of Hands.

possible, and pass into it a piece of con- ection-tubing 8 or 9 in. long, drawn to a ne point at the further end. Fit the cork in he tube, and, taking the handle thus formed in he *palm* of the hand, close three fingers loosely ver it, and hold it lightly between the forefinger d thumb, very much as a fencing-foil is held, but with the palm downwards. This is the only way to hold tubing for rotation in the flame. Now balance the combination. The relative weights of the different parts should be such that the finger and thumb are now pretty close to the cork. Put the elbows on the table and commence slowly turning round the tube on a horizontal axis. The hand drops over at the wrist, making an angle of about 120° with the forearm and being 4 or 5 in. above the table. The turning is done by the fore-finger and thumb alone; the tube lies between the palm and other fingers, as on a rest. Use one or two fingers of the left hand, if necessary, to support the other end as in a **V**. Adjust the cork till the axis of the two tubes is the same. Now practise turning, till you can do it almost as truly as if using a lathe. Then take away the left hand, and continue. There must be no "wobbling." You will soon find that it is a matter of feeling rather than of seeing, and it is this "feel" that you need to acquire. Practise it steadily.

FIG. 6.—Flasks, &c., blown from Test-tubes

Now adjust the blowpipe flame, and establish yourself so that you can comfortably maintain a flame, say, 4 in. long (with both cones axial with the blowpipe), and so steady that it will keep up at least half a minute after you have taken your foot from the pedal. Try now the following, a step at a time. The end of the test-tube is very thin; before we can do anything with it, it must be thickened.

Bring just the end into the edge of the flame, rotating as steadily as you can. As it thickens and falls in, advance a little more till about an inch of the end has shrunk into a thick mass of glass, distributed, however, quite axially. Now take the tube from the flame—no hurry—change the grip in doing so, but without ceasing a slow rotation, bring the open end to your lips, inclining the tube a little upwards in front of you, and still turning slowly, "puff" once or twice with the cheeks, watching the effect. You do not want a bulb at present, but just a slight uniform expan-

sion of rather thicker glass. If it bulges out on one side, or hangs over, or has any fault, you must heat up again till you get it right. Assuming that you have got it right, you may now heat up again in a rather larger flame very uniformly, and blow it out to a diameter about half as large again. On a $\frac{5}{8}$ in. test-tube this will give a round bulb about an inch in diameter. Rap it on the table to see that it is quite sound and strong enough for any ordinary use. Make a lot of these; they are excellent for a variety of purposes, oxidising with strong HNO_3, digesting, &c.

Second step. Starting as before, instead of blowing the final bulb try to absorb another inch or so of the test-tube. Keep the hot end inclined a little upwards, so that the hot glass flows down; heat very little thin glass at a time, blow gently and frequently, if necessary, to keep the tube in shape. When you have got as far as you can, and the glass will only just support itself, blow your final bulb as before. With a little practice you will find it easy to take in about half the test-tube in this way, and will get a small round-bottomed flask about $1\frac{1}{2}$-$1\frac{3}{4}$ in. in diameter. Make a number of these.

Third step. To flatten the bottom, so that the flask will stand upright. Rotate the flask by means of the handle at right angles, or nearly so, to the flame and just on the edge. Watch it flatten, incline it a little forward or backward till the plane on which it flattens is at right angles to the axis. A very little flattening is enough. Bring it out, blow gently—one puff—then immediately suck inwards. This, if done properly, will give you a perfect bottom. Do not try pressing it on anything; you will only spoil it.

These little flasks have a nice, finished appearance, and are very useful for quantitative work, on account of their extreme lightness. Make half-a-dozen for CO_2 estimations, and afterwards send your dealer one as a model, and get him to "supply the pattern." If quite a beginner in this work, you will probably find it an advantage to start with a piece of cylinder tube about the same size, but not quite so thin as a test-tube. Put a border on one end, close and round the other; proceed as before. But you should work up to the test-tube.

JOINING END TO END.

This is one of the most useful as well as one of the easiest acquirements. Yet, strange to say, it is constantly shirked by teachers and students, who throw away broken apparatus, or use all sorts of clumsy rubber joins, from want of facility in joining glass. Sufficient instructions are given in the books. Many glass-blowers open out the ends to be joined a little before bringing them together. The glass must be actually melted, either altogether or bit by bit. To get a nice smooth join, the glass is blown into a little bulb or expansion and then slightly drawn down. Joins in fixed apparatus are made with a small hand blowpipe. All other openings but one are closed, and to this is fitted a length of rubber-tubing, in order to be able to blow. If an opening is not available, o may be made by putting in a side branch. T skilled worker will dispense with this, and obta his internal pressure by heating some part of t apparatus. As it is often difficult in these cas to get the tubes accurately together, a sm opening is often left. A small thread of glass kept in readiness, with the heated end of whi this can be filled up. After a little practice t most complicated apparatus can be put together this way, and it is almost less trouble to ma such a join and cut it again than to use ind rubber junctions. Reverting to test-tubes, I m point out that beautifully light U-tubes may made for gravimetric purposes by joining t test-tubes by means of an inch or so of connecti tubing and then bending up. For this purpo thicken the ends of the test-tubes before blowir out, and expand the ends of the connectin tubing.

PUTTING IN SIDE-BRANCHES AND MAKING T-PIECES.

This is a little more difficult than the last to d nicely. A fine-pointed flame must be used, at an rate by the beginner. The Fletcher blowpip answers well for this purpose.

Commence by putting a piece of connectin tubing into the side of a piece of cylinder abou half an inch wide and not too thick. Close or end of the latter; soften a small spot, blow up int a little eminence, soften the top of this, blow t again, finally blow out the end, leaving, when th bubble is broken away, an incipient side-tub Close the other end and proceed as in joining en to end. Go round bit by bit with the point flame, blowing between whiles. Finally, heat th whole join, blow and pull a little. It is well heat afterwards all round almost to softening poi and cool slowly. After a little practice th beginner may put a side-piece into a test-tube one of the little flasks already made, thus makin a "distillation-bulb."

Facility in putting in these side-branches is ve necessary, and should be acquired. Many st dents who never acquire the power of blowing decent bulb can easily learn this simple proces and it is really more useful than the other. Gla T-pieces are very useful in the laboratory, and number may be made.

Eager Heart: A Christmas Mystery Play. By A. Buckton. 40 pp. (Methuen.) 1*s.* net.—This little play staged according to the author's directions and accompan by the music he has indicated, would probably make an effect Christmas performance, because more depends on the st management than on the poetry of it. The poetry certai is not the strong point of this production, for, although the li are generally technically correct, they do not move easily, the diction is not always natural. The music suggeste mainly taken from Bach's Christmas Oratorio. This wo seem to militate against school performances of this myst If any ordinary school can muster sufficient strings capabl playing the Pastoral Symphony from that work, the pre writer would highly esteem an invitation to hear them perfo

ILLUSTRATIONS AND THE TEACHING OF LATIN.

By W. H. S. JONES, M.A.
Perse School, Cambridge.

The art of composition, that is, of intelligent arrangement of thought, is more effectually illustrated by a picture than in any other way.—THRING.

DURING the early stage of the teaching of Latin the question of a suitable "content" becomes of great importance. Something must be done to create a Roman atmosphere, and to prevent the study from being entirely linguistic. It is the recognition of this necessity that has caused the enormous output of illustrated editions during recent years. Lately, a reaction has set in. It is affirmed that the illustrations are badly chosen and incorrectly executed, and further, that they arouse the wrong kind of interest, disturbing the work in hand instead of aiding it. The wrong choice and inaccuracy of the illustrations are fair points to attack, although it must be urged that they are not inherent faults, but such as care and experience may overcome. But the other objection is more serious. Too many interruptions in the course of the construing lesson are certainly to be avoided. But illustrations can be used to teach the language and afford practice in composition during the first and second years of Latin. If so, the objection of divided interest falls to the ground. Attention is concentrated upon the objects represented and their Latin equivalents. Something, at least, can be said in favour of such a course, although it must not be supposed that translation can be altogether dispensed with, nor that pictures smooth away all the difficulties from the path of the learner. At most they make Latin a greater reality, a more living language, and help the imagination in reconstructing the shadowy past.

Under the present system, Latin is begun early, and the child has usually to contend with two great difficulties on commencing his studies. He is introduced to a world that is outside his sense-experience. "*Miles*, a soldier," suggests to his mind, not the Roman legionary, but a red- or khaki-coated "Tommy." He is ignorant of the force of an inflexion; a declension, or a conjugation, has no meaning for him. Unless he is precociously advanced in his grammar, he finds it very hard, in fact rarely tries, to discriminate between *mensa* and *mensam*. Pictures and models, used as the basis of composition, will certainly lessen the former difficulty, and may be useful in removing the latter.

The repugnance felt by a child to a Latin declension is due to his ignorance of its nature and use. Even when the few English declensions (*who*, *whom*, *whose* and the like) are familiar, and some progress has been made in French, there is still something mysterious and unmeaning in *mensa*, *mensa*, *mensam*, and the rest of the rigmarole. The present writer well remembers the state of perplexity which followed his being informed that *mensa* could mean "O table." What manner of people might these strange folk be who spoke to their tables? Surely something can be done to put more meaning into the lifeless forms. If the class be shown models or pictures of Roman soldiers, and then be told, with translation if necessary, *Ibi gladius est; miles gladium habet; mucro gladii acutus est*, and so on, the child-mind will after a while be prepared to learn the paradigm and the names of the cases that compose it. Of course it is not intended that the process should be prolonged. As soon as the child understands what a paradigm is, he may learn similar paradigms at once. A paradigm is a shorthand summary of certain facts of language. When these facts are understood, but not before, the shorthand is an aid to memory. If a declension be learned

SIGNUM HAUD DUBIUM.

before the meanings of the cases, it may be repeated parrot-wise, but the knowledge is useless, for it cannot be applied. It is as well, however, to anticipate the impression that pictures are meant to be an easy and rapid road to a knowledge of Latin. On the contrary, the difficulties must be faced, the paradigms learned. But it is equally necessary that they should be learned intelligently.

Another use of pictures and models is to serve as material for composition. Ordinary illustrations will often suffice, but they may be specially prepared for the purpose. Series of pictures, representing the chief moments of a story, have been successfully used in modern-language teaching, and there is no reason why they should not be equally serviceable to the classical master. Under careful guidance a class may learn, by working with their teacher, the laws they must obey in writing a piece of composition. The following are short descriptions of a series of six pictures used by the present writer for this purpose:—

I. Sextus Tarquinius being flogged.
II. The people of Gabii welcome him.
III. Sextus sends a messenger to his father.
IV. Tarquinius Superbus strikes off the tallest poppy heads.
V. The chief men of Gabii are led away to death or exile.
VI. The Romans enter and take possession of the city.

Now it is obvious that the pictures in this case cannot give the whole of the story. No one can tell, unless he is familiar with the legend, that the gentleman in IV., striking down the poppies, is the Roman king, and father of the gentleman in I. who is receiving the flogging. So at some point or other in the lesson the teacher must impart such information as is absolutely necessary.

If the class consists of boys in their second or third year of Latin, the lesson takes somewhat the following form. The class looks at the first picture, and then the master asks about whom they are going to talk. Answer: *Sextus Tarquinius.* Teacher: "What are you going to say about him?" The question may be asked in Latin if it be thought advisable. Answer: *Verbera patitur.* Teacher: *Cur verbera patitur?* Answer: *Ut Gabinos fallat.* It may happen that a boy will suggest the addition of *sua sponte* or *iussu patris*, or even the prefixing of *Cum Romani Gabios vi expugnare non possint.* Perhaps no boy is ready with an answer, or the answer given is imperfect. The teacher must then suggest an answer, or bring about the amendment of the faulty one. He must pay attention to the order of words, and show how the order of words is, roughly speaking, the order of thought. Plenty of scope is thus given to his ingenuity and power of stimulating interest. When the first picture is finished the final description is written on the blackboard, thus:—

Cum Romani Gabios vi expugnare non possint, Sextus Tarquinius, filius Superbi, sua sponte verbera patitur ut Gabinos fallat.

PICTURE II.

T. About whom are we going to talk?
A. *Gabini* (teacher suggests *illi*).
T. *Quid faciunt Gabini?*
A. *Sextum excipiunt* (teacher suggests *eum*).
T. *Quando excipiunt?*
A. *Vulneribus visis.*
T. *Quomodo?*
A. *Laeti.*

In this way the second sentence is composed. *Illi vulneribus visis eum laeti excipiunt.* And the story might go on: *Tandem imperio summo potitus Sextus epistulam ad patrem mittit ut discat quid sit faciendum. Ille veritus ne infidus sit nuntius nihil voce respondet, sed in hortum progressus summa capita papaverum baculo decutit. Quibus renuntiatis Sextus ubi intellegit quid pater velit primores aut occidit aut expellit. Deinde rebus occisorum populo divisis placet ut Romani Gabiis potiantur.*

The whole story is then copied from the board *by each boy into* an exercise book kept for the purpose. As each boy has a copy of the pictur and, so to speak, sees the events taking pl before his eyes, it is natural to have the st told in the present tense, as above. Afterwar (*e.g.*, as home-work), it can be written out in t past. This will involve attention to sequence tenses, to the difference between perfect and i perfect, and so on. Other variations are possit Sextus may tell the story, or Tarquin the Pro or the people of Gabii. Later on more advanc pupils may compose original themes without he but at first these must be avoided. If allowed free hand young boys will simply evade diffic ties.

The chief value of such a lesson as the o outlined above is its elasticity, and the conseque possibilities of hearty coöperation between teach and class. By working with his pupils the teach shows them how they ought to work by ther selves. At the same time he is prepared to we come any suggestion and turn it to the be advantage. The "average boy," who often sin into listless apathy after a few terms at translati exercises he does not quite understand, is rous to action when he sees his teacher working wi him and leading him to the achievement of son thing artistic. And all the while the connecti between words and ideas is kept alive by the u of visual-impressions, instead of words, to sugg the ideas to be clothed in a Latin dress, an exc lent antidote for the mechanical, word-for-wo operation into which translation is apt to dege rate. There is no opportunity for the learner mistake what he has to express in Latin. In picture all is clear-cut and precise. Finally, th capture of the attention by the illustration, serious drawback during a construing lesson, is positive virtue when the details of the illustrati form the subject which the pupils have to tu into Latin.

But it must not be supposed that other exercis are superseded by this use of pictures. One less a week—possibly two with young boys—is qu enough to accomplish the end in view. Transl tion, construing, learning of nouns and verbs, a as necessary as ever. It is only contended th picture-composition throws an intelligent intere into the more formal exercises.

Illustrations, then, may be used in the ve first period of Latin teaching to familiarise t child with inflexions, as a preliminary to t learning of paradigms, by making him conne inflected forms with various relations coming wit in his sense-experience. At a later stage pictu and picture-stories may be used as material composition. During both periods something being done to enlarge the learner's stock of Rom ideas, and so help him to reconstruct the life the people whose language he is studying. It m be added that, much of the work being *viva v* progress is more rapid than when composition taught by writing alone.

These few remarks are the outcome of writer's personal experience. He has used p tures with three forms representing three sta

ıpment, and the results are even better expected. Too much is not claimed for ut any plan is worth a trial which to make progress in Latin easier and e.

ECT LIBRARY OF PEDAGOGY.

By Foster Watson, M.A.
r of Education, University College, Aberystwyth.

EN the editors of The School World sked me to write on the subject of a elect library of pedagogics, such as could ased for £5, I thought the task would be sier than I have found it to be. The have named, *in their entirety*, would cost , but it seemed better to offer scope for There are, I believe, many teachers who ladly know what books are best worth ınd getting. I want, therefore, to offer a nprehensive, though a choice list.

ust admit that English books on educa- often far from attractive reading. Mr. ggests that the only English educationist putation is European is John Locke, and may be said he is read rather as a philo- han as an educationist. It is probable ·bert Spencer now commands as wide an and probably as high a reputation as But even when we add the names of such writers as one has seen in foreign trans- he list is very small. English writers on n who can gain a hearing because of the eness of their style are comparatively few. ıs when educationists received attention ɔse who could read, as, for instance, in ; of Erasmus, Budaeus, Vivès, Sturm, thon, Sadolet; but these were literary well as teachers. In England we had, , men who interested their fellows in ; of teaching, because they wrote in an ıg way. Such, surely, were Sir John his "Governour," Roger Ascham in his master," and John Milton in his "Tractate ıtion."

eader is specially in sympathy, and has ır knowledge of some period of English or literature, I believe it is an excellent ake an outstanding educational author of ɔd and read carefully with a view of seeing the writer is adapting his educational aims thods to the effective advance of the deals of his age. The struggle to adjust ınal material and method to religious, hical, political, social, and recreational his time, is usually fairly evident if looked constitutes in itself at once an intellectual into the material (*i.e.*, subjects of study) ation and the processes of imparting the , and at the same time shows the action ction between an educational system and ironment in which it is placed.

As an example of the method I suggest, take Rousseau's "Emile." I cannot imagine a sounder training in educational thought for a student interested in the French Revolution and the events leading to it than to read the "Emile"; if in French, so much the better. I mention this at the outset because we have in English a "Life and Criticism of Rousseau" which takes high rank in English criticism. I mean Mr. John Morley's "Rousseau."

Rousseau's "Emile" in the International Education Series. (Appleton.) 6s. Morley's "Rousseau," 2 vols. Eversley Series. (Macmillan.) 4s. each, net.

It is true we do not hear of Mr. John Morley's book on Rousseau or his treatise on National Education, or his book on Compromise, as set books in examinations on education; nevertheless, I am inclined to think that those who have not read the chapters on the Social Contract and Emilius in the second volume of Mr. Morley's "Rousseau," and his other books mentioned above, have neglected to consult some of the most stimulative thoughts on education of recent times. It is such criticism that removes from us the reproach of our unspeakable inferiority to the French. We feel we are in the hands of a master. We listen, we follow the thought. We shall fare hard indeed if in the process we do not find our own educational thought aroused and invigorated. It takes the reader on to that plane of serene, high consideration where education comes to its own.

It will thus be seen that it is highly desirable to read as soon as possible the works on education which count as part of the world's literature. I do not profess to give a full list, but the following I should certainly urge as part of even a small pedagogical library:—

"Plato's Republic." Vaughan and Dain's Translation. Golden Treasury Series. (Macmillan.) 2s. 6d. net.

Then, as a commentary and criticism:

R. L. Nettleship's "Lectures on the Republic of Plato." (Macmillan.) 8s. 6d. net.

Aristotle.—There is an excellent little book lately published by the Cambridge University Press, entitled, "Aristotle on Education: being Extracts from the Ethics and Politics." Translated and edited by John Burnet. 2s. 6d.

There is, unfortunately, no book in English on Quintilian. There ought to be, for he is a writer of outstanding importance, and might be made of great interest if properly presented. In the meantime the student can find, in Prof. Paul Monroe's "Source Book of the History of Education for the Greek and Roman Period," a treatment with extracts of Quintilian. Prof. Monroe also gives extracts from the chief Roman and Greek writers on education. (Macmillan, 10s. net.)

Laurie's "Pre-Christian Education" (Longmans, 7s. 6d.) is also a book to buy.

Probably the cheapest way of travelling through the education of the middle ages is to purchase the "Alcuin and the Rise of the Christian Schools" and "Abelard and the Origin and the

Early History of the Universities," in the Great Educator Series (Heinemann, 5s. each). For anyone requiring a fuller insight into and more comprehensive study of mediæval education Lane Poole's "Illustrations of the History of Mediæval Thought" (Williams and Norgate, 10s. 6d.), H. O. Taylor's "Classical Heritage of the Middle Ages" (Macmillan, 7s. 6d. net), and Hastings Rashdall's "History of the Universities of Europe in the Middle Ages" (Clarendon Press, £2 5s. net), should be studied.

With regard to the history of education since the Renascence, the books usually recommended are, R. H. Quick's "Educational Reformers" (Longmans, 3s. 6d.), and Campayne's "History of Pedagogy" (Sonnenschein, 6s.). These are, undoubtedly, valuable manuals, but it seems to me that a book with a wider sweep of knowledge and a larger outlook in the progress of thought should be read and possessed by keener students. I would suggest such a book as Charles Beard's "Reformation of the 16th Century in its Relation to Modern Thought and Knowledge" (Williams and Norgate). Cheaper edition, 3s. 6d. The whole spirit of the book is at once educational and literary. The last two chapters, on the Critical Spirit and the Development of Philosophical Method and Scientific Investigation, seem to me to illuminate the history of culture since the Reformation, and of that culture-history the progress of educational aim and method has naturally followed closely in the wake.

For the best work on the noblest of the Renascence educationists, Vittorino da Feltre, we are fortunate in having Prof. W. H. Woodward's "Vittorino da Feltre and other Renascence Educationists" (Cambridge University Press, 6s.). We may look forward to Prof. Woodward's book on "Erasmus as an Educationist"[1] with the sure expectation that it will, similarly to his Vittorino, be a scholarly and attractive presentation of an educator who must not be neglected, who would assuredly not be overlooked if it were realised how interesting Erasmus is in his own personality and in the history of educational thought. Of Francis Bacon, at least the "Advancement of Learning," Books I. and II. (Clarendon Press, 4s. 6d.) and the "New Atlantis" (Cambridge University Press, 1s. 6d.) should be read. Such a commentary is desirable as the section on Bacon in Prof. S. S. Laurie's "Educational Opinion from the Renascence" (Cambridge University Press, 6s.), a book which, despite its eclectic nature of the educators treated, is one of the wisest of the later English books on education.

Roger Ascham's "Schoolmaster" can be got for 6d. (Cassell's) or 1s. (Bell).

Mr. James Oliphant has edited a series of extracts containing:

"Educational Writings of Richard Mulcaster" (Maclehose, 3s. 6d.), but of course Mr. Quick's reprint of the "Positions" (Longmans, 10s. should be obtained by the lover of complete editions.

Milton's "Tractate," is published by the Cambridge University Press. 2s.

For Comenius, either Prof. Laurie's "Account of Comenius's Life and Works" (Cambridge University Press, 3s. 6d.), or Mr. M. W. Keatinge's "Translation, with Historical Introductions, of the Great Didactic" (A. and C. Black, 7s. 6d.) is a desirable possession. So, too, R. H. Quick's "Locke's Thoughts on Education" (Pitt Press 3s. 6d.) is indispensable to a library of pedagogics

The great thing in connection with Pestalozzi is to enter into the spirit of his life. For this, read John Russell's translation of R. de Guimps "Life of Pestalozzi" (Sonnenschein, 6s.). For Froebel the "Education of Man" has been well presented in the International Education Series (Appleton, 6s.). Carré's "Pedagogues of Port Royal" (Sonnenschein, 3s. 6d.) is a desirable book, if there is not time to read either Ste Beuve or Charles Beard's Port Royal. For the rest I should suggest, to complete this general outlook, Prof. Findlay's "Arnold of Rugby" (Cambridge University Press, 6s.), and the "Series of Lectures on Education in the 19th Century," edited by Dr. R. D. Roberts. (Cambridge University Press, 4s.)

Such a course of reading represents a body of educational ideas. Such a set of books provides material for considering the broader issues of educational progress and development. But it will be asked what about the science of education? Well, I believe that in the future a tendency will set in to consider even a science of education increasingly from the side of an analysis of the constitution of intellectual, moral, and physical culture as found in recorded history as surely as the historical schools of law and of economics have altered the constitution of the older *à priori* theories of law and economics. It is an astounding fact that there is no satisfactory comprehensive book on English *Kultur-Geschichte*. The very expression is borrowed from Germany. Yet this is a desideratum for the basis of the historical side of the science of education.

In the meantime, it is to be clearly borne in mind that education is regarded as one of the mental sciences. It is, however, further regarded as an applied and practical science. Its relation to such sciences as psychology, ethics, logic, and the other mental sciences, is similar to that, say, of engineering to mathematics, physics, geology, and other physical sciences. It is, therefore necessary to know the chief principles of each of the mental sciences. For this reason a good text book on each of these subjects should be in the possession of the student of education. I should suggest for example—

For Ethics:—J. S. Mackenzie's "Manual of Ethics." (Clive). 6s. 6d. Or J. H. Muirhead "Elements of Ethics." (Murray). 3s. 6d.

For Psychology:—Sully's "Teacher's Handbook of Psychology." (Longmans). 6s. 6d.

[1] ["Desiderius Erasmus concerning the Aim and Method of Education" (*Cambridge University Press*, 4s. net) has been published since Prof. *Watson wrote this article.*—EDS.]

gic:—Prof. Welton's "Logical Basis of n." (Macmillan). 3s. 6d.
e number of books which might be named atives to these is legion; and I venture to above as being distinctly good and useful hich for compass, soundness, and sug- ss to the teacher are desirable, in the of any other which for very definite he book-buyer knows to be better adapted ecial requirements. In addition to these uite falling under any of the above heads, add:
's "Conduct of the Understanding." y Fowler. (Clarendon Press.) 2s. And, which has quite fallen out of use, but eing quite replaced: Isaac Watts "On rovement of the Mind." A book which ommonly picked up second-hand at any etween a few pence and a half-crown. there is a modern edition I do not know.
that the theory of education is regarded nalgam of ethical, psychological, logical, cal elements, it is quite clear that books led which may give a synthetic view ational aim and process, within the al and in groups of individuals. For of the latter, books on certain sides of edu- *g.*, elementary, secondary, and university, e sociological rather than individual, are y numerous, but only few are essential to s in a very small library. One should ed. Cardinal J. H. Newman's "Idea niversity." (Dent). Cloister Library. et. It is difficult to distinguish between types of writers. The writers who, on le, deal with the education of the in- mainly are, for the theory of education, as nt understood, the most important. But be no doubt that in English writers the nd reaction between the individual and is usually scantily treated. So much is case that I do not recall in any English on education any thorough-going study of obvious problem as the difference of the an individual from the child as a member s. Indeed, an adequate discussion of the gy of the individual and the class, in its to mental development, would be distinctly

xamples of a theory of education—or of it—in which the underlying mental have due consideration, the following be in the possession of the student of n:—Herbart's "Science of Education." Translation. (Sonnenschein.) 3s. 6d.
mmentaries, the following should be ob-

rbart and the Herbartians." By Prof. de in the Great Educators series. (Heine- 5s. Mr. and Mrs. Felkins' "Introduction bart." (Sonnenschein.) 3s. 6d. And, in , probably the raciest and certainly one most attractive of recent English educa- books:—"Herbartian Psychology." By ohn Adams. (Isbister.) 3s. 6d.

Prof. Rein, "Outlines of Pedagogics." (Sonnenschein.) 3s. 6d.

"Kant on Education." Translated by Annette Churton. (Kegan Paul). 2s. 6d. A most valuable little book.

Lange's "Apperception." (Isbister.) 3s. 6d. The most illuminative book on the analysis of the process of communication and reception of ideas—on Herbartian principles—ever written.

Edward Thring's "Theory and Practice of Teaching." (Cambridge University Press.) 4s. 6d. Is a finely individualistic piece of writing coming straight from the experience of the class-room.

Of Prof. S. S. Laurie's books, I am inclined to say, read and possess, which means read and re-read, *all* his books. They are the strong utterances of a strong man, who has looked long and closely at education and seen it whole as well as in its parts. I give the prices of the following: "Institutes of Education." (Oliver and Boyd.) 6s. "Language and Linguistic Method." (Cambridge University Press.) 4s. "Training of Teachers and Methods of Instruction." (Cambridge University Press.) 6s.

Prof. Wm. James, "Talks to Teachers." (Longmans.) 4s. 6d. A popular book, though sound, suggestive and attractive.

Rosenkranz, "Philosophy of Education." International Education Series. (Appleton.) 6s. And in same series (6s.), W. T. Harris, "Psychological Basis of Education." This is undoubtedly the best book in English on education based on predominantly Hegelian principles.

On National Education, certainly the work of A. Fouillée should be read and re-read, for, whether we agree with it or disagree with it, it is an outstanding modern work, very sugestive and stimulative. It is entitled:

"Education from a National Standpoint." International Education Series. (Appleton.) 7s. 6d.

Of books on method I would suggest only a few; for, when a teacher sees the principles underlying method, much reading is secondary to spontaneity of the teacher's own personality:

Mr. P. A. Barnett's "Teaching and Organisation:" a collection of essays by experts in their various branches of teaching. (Longmans.) 6s. 6d.

The late Sir Joshua Fitch's "Lectures on Teaching." (Cambridge University Press.) 5s. A book breathing a truly educational spirit.

Prof. J. J. Findlay's "Principles of Class-Teaching." (Macmillan.) 3s. 6d. A highly suggestive and enthusiastic treatise.

On no account should be overlooked the little book by Mr. Arthur Sidgwick, "Stimulus." (Cambridge University Press.) 1s.

And no one will grudge 6d. for Prof. John Adams's "Primer on Sunday-school Teaching." (T. and T. Clark, Edinburgh.)

A library will do well to possess the useful "Bibliography of Education" by Prof. Will S. Monroe. International Education Series. (Appleton.) 8s. 6d.

I have not quite finished. A teacher or anyone interested in teaching should have Sully's "Studies

of Childhood"—(Longmans, 12s. 6d.)—not only for the interesting mass of information concerning children's minds gathered together, but for the study of the method of observing children's mental traits.

And finally, of all people, the teacher should have some self-chosen book friends, on his subject, some books (if I may so term them) of educational pleasaunce.

Of the kind I mean are the following:

D'Arcy Thompson's "Day Dreams of a Schoolmaster." (Isbister.) 5s.

Walter Pater's "The Child in the House." Miscellaneous Studies. (Macmillan.) 9s.

J. H. Shorthouse, "The Little Schoolmaster Mark." (Macmillan.) 3s. 6d.

Wordsworth's "Prelude." (Temple Classics.) 1s. 6d. net.

George Meredith: "Richard Feverel": the Story of a Father and a Son. (Constable.) 2s. 6d. net. "Lord Ormont and his Aminta." (Constable.) 2s. 6d. net.

But it is the important point about these books that they should be self-chosen. All I suggest is that some portion of what is to be spent on a pedagogical library be reserved for them.

A PARISIAN DAY SCHOOL FOR GIRLS.

By A. E. METCALFE, B.Sc.

Formerly Headmistress of the Stroud Green and Hornsey High School, London, N.

BEFORE the Law of 1880, which authorised the establishment of lycées for girls in France, had led to any practical results, an association was formed called "La société pour la propagation de l'instruction parmi les femmes," the members of which, being convinced that social progress must depend on the education of the rising generation, and particularly on that of girls, set themselves the task of giving practical expression to their ideas. The result was the foundation of the Collége Sévigné, the immediate success of which led to the establishment of various prosperous lycées for girls throughout France. In spite of the rivalry thus engendered, the college has more than held its own, and, though no longer directed by the original board of governors, it continues to realise the ideal of the founders, and under its present distinguished head, Mademoiselle Matilde Salomon, it occupies a unique and important position in the French educational world. This is due to various causes. To begin with, the college is a day school, and, situated as it is in the centre of the intellectual quarter of Paris, it draws pupils from the cultivated class—pupils, therefore, who are not only gifted with an aptitude for learning, but who are by no means dependent on *the few hours spent* in the class-room for their intellectual equipment. For this is another advantage of the system, the school hours are sho all the regular teaching being given in t mornings, and the afternoons being devoted preparation and to lessons in optional subjec such as drawing, needlework, &c. Attendance i the afternoon is optional.

Where the time devoted to teaching is so sho (fifteen hours weekly), the quality must necessaril be of a high order. This condition is secured b the excellence of the staff of professors, whic includes both men and women, and consists bo of those who devote their whole time to the colle and of specialists for certain subjects.

Only a limited number of pupils are admitte about 100 in all, and the classification is such to admit of personal attention being devoted each child. There are in all ten classes correspon ing to a range of age of from 6 or 7 to 16 or 1 Since 1885 special classes have been formed f the purpose of training women teachers both f primary and secondary schools. These are, course, quite independent of the school prope but any account of the work which is being do in this training department, interesting though is, is beyond the scope of these notes.

Another advantage enjoyed by the pupils of t college is that the scheme of work is not fetter by the exigencies of any particular examinatio The older girls do as a matter of fact prese themselves, and with success, for the *baccalauré* (the entrance examination for the university) a for the examinations of the Hôtel de Ville[1]; b these are not regarded as the chief end in vie Moreover, there is no rigidity as regards th curriculum—changes are made from time to tim and experiments tried as the occasion arises. Bu with such elasticity, only possible to such a degre in a school under private control, is combined breadth of view and an open-minded attitud which is often considered to be possible only i a public school.

In the following summary of the method adopted with regard to the various subjects o the curricnlum, free use has been made, with th kind permission of Mlle. Salomon, of the admi rable "Exposé des méthodes d'enseignement" drawn up by herself and her staff. If they do no constitute a complete and final solution to th questions which must always confront practica educators, they at least provide an interestin example of how these questions are being met a the present time.

THE CURRICULUM.

"What ought we to teach young girls in orde to make of them well-informed and well-bre women capable of thinking and acting for the selves? How can the system and scheme instruction of a school react on the developmen the character and on the whole life of the pupil

[1] The "brevet simple" and "brevet supérieur."

inent men who drew up the scheme of
the college set themselves the task of
ng these and similar questions. Their aim
rovide a unified scheme of instruction the
branches of which would all converge
the same object, all being inspired with
ie dominant idea. This object was to
by every possible means the general
nce of the pupils, and the habit of indi-
thought. It might perhaps be described
pplication of scientific method to a literary
m. For the foremost place is given to the
language and literature.

ENCH LANGUAGE AND LITERATURE.

rench a text-book of grammar is allowed,
pupils are expected to produce their own
s in illustration of any rule. Theoretical
r is practically applied by means of "ex-
l dictation" (*dictée expliquée*). A passage
ed, and each pupil in turn writes a phrase
blackboard. Difficulties are foreseen and
s prevented, and thus the visual memory,
plays such an important part in ortho-
runs no risk of being spoilt. The phrase
duced by the whole class in their exercise-
As regards parsing, special attention is
the use of verbs, and the agreement of
s insisted upon, particularly in the lower
In analysis, technical terms are avoided,
pupils are expected to be able to give an
of the train of thought, and to recognise
ngement of dependent sentences around
ncipal one. As regards vocabulary, the
definition of words is of primary impor-
This is rendered the more precise by the
etymology and by the finding of synonyms
onyms. Families of words are constructed
ting a root, and associating it with various
and suffixes. Inversions, enumerations,
ors, and figures of speech are examined
ir use justified. The pupils are expected
rline in their exercise-books every word
as given rise to an important explanation,
ey are afterwards questioned upon them.
ding, extracts are always taken from the
of good writers. For the lower classes
s describing voyages, scenes of ordinary
d such like, are selected. In the upper
passages selected from classical authors are
equent, and the explanation becomes more
. The older pupils take a short course of
al grammar, in which special attention is
the relationship which modern French
old French.
reference to Latin is made as simply and
as possible, for this is a subject which, for
reasons, has no place in the regular
lum. For one thing, it is popularly asso-
with notions of superstition to which women
pecially have been subject. Further, it is
led that what is best in Latin has been
rated into the French language, and that
the training afforded by the study of a language can be applied most advantageously in studying a living one. Lastly, as the field of knowledge is continually enlarging, it becomes necessary to eliminate subjects hitherto considered essential, and a "dead" language thus stands condemned. Latin is, however, an optional subject.

The teaching of literature is begun with quite young children. In the early stages it consists of readings, recitations, and written exercises relating to matters of everyday life. "It is a good thing to open the eyes of children to their surroundings, to make them notice what they see when looking out of a window or on their way to school. They must be taught to be interested in the lives of things, to care, for instance, for the history of an old house as much as for that of a grain of corn. The work of correcting exercises consists pre-eminently in pointing out to children what they themselves do not perceive through inattention. They must be taught that everything is of interest, that everything must be studied, and loved, and understood. Later they will learn the niceties of composition and the choice of detail. But at first nothing is lost by accepting every-thing. The principle is to enlarge and to enrich their little lives, which as yet are limited and narrow. . . . The life of animals must be explained to them, and to a certain extent the life of man." This passage is so characteristic of the scientific method as applied to literature that it has been here reproduced at length from the memorandum already mentioned. The art of thinking and speaking correctly is exercised by accustoming the children to relate stories which they have read or invented; later an account of some book or the biography of some great man will be rendered. Such exercises give rise to numerous explanations touching on all manner of subjects; the object throughout is to teach the children to think and to be able to give an account of what they think; to arouse in them interest and admiration, and to explain the reason for such sentiments.

With this object in view the teacher is never afraid to modify his programme or to vary his methods to suit the needs of the particular class with which he is dealing. Such a preparation leads up to the methodical study of the history of literature, and written work is made gradually more difficult and varied. Having acquired the power of expression by describing objects, they are now asked to express ideas. They are taught "that there is no thought so simple but that it requires attention, and presents some difficulty which may occasionally be one difficult of solu-tion; that all ideas are related; that an opinion or appreciation must not consist of a careless word or two, but must form part of the whole system of ideas which constitute the intelligence. Here is a means of teaching them respect for their own thoughts, coupled with due respect for the thoughts of others."

In studying the history of literature, reference is continually made to the actual works of the authors,

and as the pupils become more advanced the class-work is insufficient for their needs, and indeed it will often be found that it does not satisfy their curiosity. The teacher suggests the course of reading, and enquires from time to time what progress is made in this respect. An insight into Greek and Roman literature is obtained by means of good translations. It is claimed that by the end of their school course, even if the pupils are not possessed of great learning, they have at least understood what they have learnt.

HISTORY.

Much the same methods are employed in the teaching of history as those above described, the object being always to stimulate the habit of individual thought. The teaching is not based upon a series of lectures given by the teachers, as is usually the case in France as much as in England. This method has of late been abandoned. Instead of this, they are provided with a text-book, and are expected to learn (by heart) a short *résumé* of each chapter, this being the only call which is made on the memory. Then the greater part of the time devoted to the subject is employed by a methodical system of question and answer. The teacher aims less at probing the actual knowledge of his pupils than at arousing their own thoughts and observations with regard to the events they have studied. His questions are framed in a manner calculated to cultivate the pupil's power of judgment more than anything else. Bald statements of facts and brief replies are not accepted. The questions are hints as to the lines which a pupil should follow in giving an account of what she has studied. One pupil will thus be asked several questions in succession until a fairly complete account of some episode has been rendered. In the course of the conversations the teacher, when necessary, supplements the information contained in the text-book. Short summaries are made at regular intervals by the pupils, who thus learn to express their ideas in a few well-chosen sentences.

MODERN LANGUAGES.

English and German are the two languages learnt at the college. The youngest children have an oral German lesson every day, and, after a few years, English is learnt as well. The teaching is at the same time practical and literary, the flexible memory of early years is made use of in acquiring a vocabulary, and grammar is cultivated chiefly as a valuable adjunct to French grammar. Similarly, translation is practised not only because it is useful in acquiring a foreign language, but because there is nothing which brings home the various shades of meaning of the mother tongue so well as the endeavour to make it express completely a fine passage from some foreign writer. As far as it is practicable, the children are made to talk. Some lessons are given entirely in German or in English, but they are also taught to read and to appreciate good books; for by this means it is hoped that the literatures of two great nations will be duly represented among the books which they will select as life-long friends. It should be mentioned that the special arrangements of the college permit of that individual attention being given which is particularly necessary in the teaching of modern languages. The home circumstances of some pupils offer far greater facilities than do those of others, and for the help of the more backward or less able pupils classes are arranged in the afternoon, by which means a uniform standard in each class can be maintained.

MATHEMATICS AND SCIENCE.

The teaching of mathematics includes arithmetic, both practical and theoretical, elementary geometry and algebra. Children of less than fourteen years of age confine their attention entirely to practical arithmetic. They are drilled in mental arithmetic and in the methodical solution of problems. A typical problem is proposed by the teacher, who directs the pupils' efforts at solution, and afterwards recapitulates the steps which have been adopted. In the following lessons, the same problem is presented in such a form that it becomes a question in fractions, in the metric system or in interest. The children are drilled in the habit of explaining in words the reason of what they do and how they do it. At the age of fourteen or so theoretical arithmetic is begun. The truths already arrived at are demonstrated and the rules justified. During the first part of the lesson questions are asked on what has gone before, the children being called upon in turn to demonstrate on the black board. During the second half-hour a new lesson is given. The theorems are enunciated by the teacher, who extracts the proof from the class. The results and applications are examined *viva voce*.

The study of geometry and algebra is not begun until the age of fifteen or sixteen. Compared with other subjects, the standard reached is not high, but that is not the aim. These subjects are, however, attacked at an age when the pupils are ripe enough to grasp with some ease the inductive and deductive processes involved, and progress is rapid. The same principles are applied as in the teaching of arithmetic, and problems already dealt with arithmetically are solved once more algebraically. Surfaces and volumes are measured practically.

Physical and natural science are taught, but not experimentally. The results of scientific research are presented to the pupils in an attractive form and in a way calculated to stimulate the interest of those whose bent lies in this direction, but, on the whole, the scientific method is perhaps least applied in the teaching of science. The aim, both as regards this subject and mathematics, is to provide the pupils with such ideas as are likely to be of use in daily life and to train them in habits of accuracy of thought and language.

It should be added that a course of practical medicine and elementary surgery is given by

or to the elder girls, "with a view to pre- ı for one of the chief duties of a woman, ›f the sick."

Other Subjects.

ıits of space make it impossible to enter letail into the manner of teaching subjects singing, drawing, painting and needle- ich also find a place in the school curri- or into that of teaching ethics ("La . This is treated as a separate subject, pirit in which it is done is perhaps suffi- dicated in the preceding notes on other

A practical outcome of the ethical ıfforded at the college has been the esta- : of late years of a link between its "old d the little pupils of an elementary school. has this had a beneficial effect on certain lies, but the old girls are bound together non interest, and their own education is d by an interesting application of the ; of joint responsibility. This Old Girls' on, though only lately formed, has a large of members and is active and vigorous. nteresting fact that the majority of the are married, and, as the wives of pro- men and of those occupying various ositions, are doubtless proving in an able manner that an enlightened and system of education is the best prepara- :h a woman can receive for the special ıich fall to her lot in life.

ONDON HOLIDAY COURSE FOR FOREIGNERS.

number of years there have been holiday rses in France and Germany, recently › in Spain; but foreigners desiring to ngland for the purpose of hearing lectures ding classes in their vacations have had t themselves with the meetings arranged ish Extension students in Oxford and ge. The credit of initiating a holiday or foreigners is due to the Teachers' ıich has already done excellent service ing courses on the Continent. It was, found advisable to unite its forces with he University of London, especially as oreign governments would only guarantee port on this condition.

llowing arrangements have been made: thur Rücker, Principal of the University on, will deliver the inaugural address at ck on Monday, July 18th, the first day of e, which extends to Friday, August 12th. s of lectures will be delivered by vards on "The Phonetics of Modern "; by Prof. Hall Griffin on "Modern English Literature"; by Prof. Rippmann on "Methods of Modern Language Teaching, with Special Reference to English;" four recitations by Mr. B. MacDonald; two lectures on "English Institutions," by Mr. Graham Wallas; and lectures by Dr. Heath on "The Influence of Recent Legislation upon Secondary and Higher Education in England"; by Dr. R. D. Roberts on "The University Extension Movement"; by Mr. Storr on "English Public Schools"; by Prof. Viëtor on "The Teaching of English in German Schools and Universities"; and by Mr. Cloudesley Brereton on "A Comparison of English and French Schools."

Classes for conversation and composition will also be arranged to suit the requirements of students, who will have the use of several public libraries, and for whose benefit there will be a publishers' exhibition of books, pictures, &c., bearing on the teaching of English and other modern languages.

Several social functions have been arranged—for instance, a conversazione at the University, an "at home" at Bedford College, a visit to the Fishmongers' Company's Hall, &c. There will be excursions to Oxford and Cambridge, to Eton and Harrow, and to other places of interest.

Students can attend the whole course, or only the first or the second fortnight; they can attend the lectures only, or the classes only, or any particular combination of lectures and classes they please. It was thought well to allow as much freedom as possible. If they wish it, they are advised as to accommodation in London, care being taken that not more than two students are assigned to any one house, and those of different nationalities.

A large number of circulars have been issued; it is believed that no European university has been overlooked. The interest aroused has been very great, and applications have been received from many quarters, especially from Scandinavia, Denmark, Holland, and Germany. The French Government are sending a number of students in August; probably there will be more next year, when it may be necessary to have two courses, in July and August respectively.

There can be no doubt that the institution of this holiday course is welcome, and that it will have far-reaching results. Those who are undertaking the work look forward with great pleasure to the visit of their foreign colleagues, and will spare no effort to make their stay in London profitable as well as pleasurable.

Further particulars of the holiday course can be obtained on application to Prof. Rippmann, Director of the London Holiday Course for Foreigners, University of London, South Kensington, S.W.

The Analytical Index to the first twenty-five volumes of the *New York Educational Review* (January 1891 to May 1903 inclusive) is ready for distribution. This Index is the most complete and carefully classified guide in existence to much of the most important educational literature of the past twelve years.

THE SOCIETY OF ART MASTERS.

PREVIOUS to the commencement of the works now going on at South Kensington in connection with the extension and completion of the Victoria and Albert Museum, there stood in the open space between it and the Brompton Road a fine, wide-spreading tree, encircled by a seat, and its pleasant shade was most inviting to visitors who had completed their wanderings amongst the treasures of the interior. And here, some twenty years ago, might be seen from time to time little groups of Art Masters, who, having disposed of their business with the Science and Art Department or with the National Art Training School (as these institutions used to be called), were glad of such a chance opportunity to exchange views on various matters of professional interest. Of these the most prominent and the most constant was the desirability of establishing some organisation which should adequately represent the Art Masters of the United Kingdom, and be a medium of communication between them and the central authority.

This was a want which had been long and severely felt, for the Masters of Schools of Art, many of them quite isolated in their work, had seldom opportunity for consultation with their fellows, and still less for communication with the Department of Science and Art, except through school committees and their honorary secretaries—a cumbersome and inefficient method—or on the rare occasions when they were able to visit the metropolis and seek the advice or assistance of the Director for Art, an official now dispensed with altogether.

This interesting but intermittent confabulation beneath the old tree in the precincts of the Museum was for a long time unproductive of result except in a constantly increasing desire for co-operation, and it was not until 1887 that a really effective effort was made. In July of that year, at an informal but fairly representative meeting of Art Masters, held at South Kensington, there was a strong and general expression of opinion in favour of the formation of a Society of Art Masters; and as it was thought that the preliminary steps could be most effectively taken by the Headmaster of one of the larger Schools of Art, whose position and experience would entitle him to confidence and support, the name of Mr. Edward R. Taylor, of the Birmingham School, was received with general approval. A circular drawn up by Mr. H. W. Owen Hagreen, Art Master at Wellington College, was then sent to all Headmasters of Schools of Art, seeking their concurrence, and setting forth the following explanation of the main objects of the proposed organisation :—

Those who have expressed a desire for the formation of the proposed Society are anxious that it should be founded upon the broadest possible basis, in the interests of Art Education throughout the country, of Art Schools, and of Art Masters.

They also wish it to be now distinctly understood that it is not desired to promote or encourage any action antagonistic to the Department of Science and Art, but that, on the oth it is hoped that the Society may very usefully co-operate assist the Department by collecting and communicating tion, and in other ways.

There is every reason to believe that the interests o of Art and of Art Masters will be most usefully serv Society which should not fail to receive official recog representing the large body of teachers connected with partment; thus providing a medium for conveying South Kensington Executive more effectually than is sible the collective views of the members in the variou gencies which from time to time arise, and of which will no doubt readily occur to you.

As a consequence of this action no fewe 106 headmasters (nearly all of whom w

Mr. C. STEPHENSON,
Chairman of the Society of Art Masters.

contributed to the preliminary expenses) i Mr. Taylor to take the initiatory steps, and following December that gentleman, in comp with so complimentary a proposal, issued a s circular to all Art Masters holding what was known as the Third Grade Certificate, invitin operation and an expression of opinion on a v of subjects connected with Art teaching. couraging replies being received, Mr. Taylor convened a meeting to be held (by permissi the Science and Art Department) at the Le Theatre, South Kensington Museum, on nesday, July 25th, 1888. At this meeting was a good attendance, upwards of sixty ma

being present, including many who are to this day on the Society's list. Mr. Taylor having delivered an introductory address, a code of rules was agreed to, the second of which (in unity with the original proposal) declared as the object of the Society the furtherance of "the interests of Art Education, of Schools of Art, and of Art Masters;" and it may be fairly claimed for the Society that the interests of art education, first in this triple declaration, have always had a foremost place in its deliberations. The Society being duly constituted, Mr. Taylor was elected as the first chairman; and Mr. Alexander Fisher, of Brighton—by whose death before many months had expired the members lost a most valued friend—was appointed vice-chairman. The first Council consisted of Mr. J. Brenan (who recently retired from the Principalship of the Metropolitan School of Art, Dublin), Mr. J. Nicol Smith (Bristol), Mr. T. C. Simmonds (Derby), Mr. C. D. Hodder (Edinburgh), Mr. J. Parker (London), and Mr. G. Trobridge (Belfast); and it was determined that one-third of the Council should retire from office each year, and be ineligible for re-election for the space of twelve months, so as to afford opportunity for a constant infusion of fresh energy into the executive body, without interfering with continuity of action—a plan which has been found to work exceedingly well. The annual subscription was fixed at a guinea, and Mr. Francis Ford, who had at the invitation of Mr. Taylor undertaken the preliminary duties of Secretary, was formally elected to that office, which he still holds.

The Department of Science and Art promptly recognised the importance and value of the newly-established Society by an assurance that "The Lords of the Committee of Council on Education will always be glad to give the fullest consideration to any communication with your Society, as representing the views of so large a body of gentlemen deeply interested in the progress of art instruction, and well qualified by their position and experience to form most valuable opinions on various matters connected therewith." Moreover, the chief officials of the Department, from the Lord President downwards, have without exception evinced their goodwill towards the Society by accepting the invitation to become honorary members.

Above all, the Society is so fortunate as to enjoy the patronage of His Majesty the King, who, when Prince of Wales, graciously consented to become its Honorary President, and, on his accession to the throne, confirmed this mark of royal favour by becoming its Patron.

The Society now numbers about two hundred and fifty members, including masters of the most important schools of art in all parts of the United Kingdom; its annual meetings (held by permission of the Board of Education in the Lecture Theatre at the Victoria and Albert Museum) and dinners, which take place at the end of July, are largely attended, and the greatest interest is shown in the proceedings.

Since the establishment of the Society the Council have been in frequent communication with the authorities at South Kensington with respect to matters affecting the working and administration of schools of art. In pursuance of such objects they have from time to time been favoured with interviews with the chiefs of the Department; and they have the satisfaction of feeling that their efforts in various directions have not been fruitless, and that their views, as of men practically acquainted with the aims, requirements, and difficulties besetting the work of art teaching, which is of incalculable importance to the national industries, have been of undoubted service to the central authority. At the present moment they are concerned in the furtherance of views placed before the Marquis of Londonderry by a Deputation from the Council in November, 1902, in relation to the inspection of art teaching, the registration of teachers, the desirability of establishing a separate division of the Board of Education, under a properly qualified administrative officer, for dealing with art education in all its stages and branches, and other matters of interest.

In addition to the advantages thus secured by the combination which this Society affords, the members receive from time to time particulars of administrative changes relating to schools, and information respecting various matters connected with their working; and an understanding exists under which members are expected to supply prompt information as to vacant masterships, which is communicated by the secretary to their fellow-members.

Of no less importance is the facility afforded for placing the Society in communication with members of the Legislature, should the necessity arise, through the medium of the numerous Members of Parliament to whom the members have access in their respective localities, an advantage which may at any time become most valuable. Indeed, the general advantages of combination and organisation are so palpable that it is unnecessary to dwell upon them.

It is due to men who have rendered good service to the Society to state that during the sixteen years of its existence the office of Chairman has been held in succession by Mr. E. R. Taylor (Birmingham), Mr. J. Nicol Smith (Bristol), Mr. M. Sullivan (Hastings), Mr. W. H. East (Dover), Mr. S. J. Cartlidge (Hanley)—now H.M. Chief Inspector for Art,—Mr. W. Scott (Norwich), Mr. W. Wallis (Croydon), Mr. F. Shelley (Plymouth), and Mr. C. Stephenson (Bradford), whose portrait we reproduce.

It may be stated, in conclusion, that the Society's financial year commences on the 1st of July, which is therefore a convenient time for joining its ranks, and that forms of application and all particulars may be obtained of the Secretary, Mr. Francis Ford, 50, Broom House Road, Fulham, S.W.

All doors must be open to instruction, that it may influence the pupil's existing thoughts and opinions. One-sidedness of instruction is harmful, for the reason that we cannot see with certainty beforehand, what will influence the pupil most.—HERBART.

THE TRAINING OF SECONDARY-SCHOOL TEACHERS AT THE UNIVERSITIES.

VI.—THE LIVERPOOL DAY TRAINING COLLEGE.

THE Diploma of Education instituted by the Liverpool University is recognised by the Board of Education as a qualification for admission to Column B of the Register of Teachers.

The course of study is open to all who have graduated or qualified for graduation in any university in the United Kingdom. It begins in September or October, according to the practising school requirements, and extends to June, when the Diploma examination is held. All the students become registered students of the University. The inclusive fee for the ordinary Diploma course is £10; for the special Diploma course (about which more will be said later) an additional fee of £5 is required. The Universily examination fee is £2.

Students are required as a rule to devote the whole of their time to the work of the college during their year of training; only in cases of students who have had experience of teaching before entering, or who can give evidence of having studied the theory of education can this rule be relaxed. As students are as a rule teaching in secondary schools during the morning hours, most of the lecture work is taken in the afternoon. The course includes lectures by the professor of philosophy and his assistant lecturers on the theory of education, the formation of character and logic; by Prof. Sherrington on physiology and school hygiene; on psycho-physiology by Mr. Smith, and on the history, theory and practice of education by Prof. Woodward, Miss Graveson, and Mr. Frank Fletcher.

Students attend the drill classes held in the gymnasium used by the Day Training College, also classes in blackboard drawing and voice production. The staff is shortly to be increased so as to include experts in the teaching of science and modern languages.

The time-table is so arranged that the practical work is, as a rule, taken in the mornings. Nearly all the large secondary schools in Liverpool and the neighbourhood afford practice to the students, who are distributed in twos and threes among them. Fortunately for the students, many of the schools have adopted the practice of sending to the college for assistance during the absence of mistresses from work owing to illness or other causes. In this way students in their second and third terms frequently have an opportunity of doing full, responsible work in the schools for a short time. Such work is, like the ordinary practical work, always supervised. The schools belonging to the Girls' Preparatory Day School Company have adopted a scheme of training students in connection with the University.

Students spend two, three, or more whole mornings in school and sometimes return in the afternoon to take occasional lessons or to assist in supervision. They are, as a rule, attached to one class, but they may give courses of lessons in other classes. Students are made entirely responsible for their courses, preparing the syllabuses, with the help of the Day Training College Staff, correcting the home work, and setting the terminal examinations. The number of courses taken by any one student depends upon her capacity. The work is supervised both by the master (mistress) of method and the teachers of the school concerned.

One special feature of the syllabus is the provision made for specialist teachers. Students taking the ordinary diploma course gain sound practice, teaching the subjects they are best acquainted with, but not specialising to any marked extent.

But students may also offer themselves for a diploma in certain specified subjects. Such candidates will be required to satisfy the faculty concerned that they have a specialist's knowledge of the subject; they are, therefore, almost invariably Honours people. They must attend special courses of lectures in the method of teaching the specific subject, also give criticism lessons and courses of lessons in that subject. These lectures are given and the criticism lessons attended by the professor or lecturer on the subject in the University.

All the lectures are taken in the University buildings. The premises occupied by the Day Training College are to be considerably extended next session. There will then be a special lecture room where small criticism lessons can be given, and a class library for diploma students.

The committee of the Day Training College have purchased a large number of French and German wall maps, and school text books and apparatus especially for illustrating geography, history, and modern language lessons.

Organised visits are paid in the second and third terms to schools of different types in Liverpool, Manchester, Chester, and other neighbouring districts.

The Oxford and Cambridge Year-book. Edited by A. W. Holland. Part I.: Oxford.) 686 pp. Part II.: Cambridge. 721 pp. (Sonnenschein.) 3s. 6d. net each.—The object of these two volumes is to give particulars of the degree, together with any other distinctions, present occupation, and address of all now living who have graduated, or who are entitled to graduate at either Oxford or Cambridge. An excellent beginning has been made, and, though we have missed some names and come across the name of one recently deceased Cambridge graduate, the omissions and mistakes seem to us few and far between, and such as can be remedied with ease next year. The volumes should prove of great interest and service to all Oxford and Cambridge men, who will be glad to possess a ready and satisfactory means of ascertaining the whereabouts of their contemporaries and other members of their Universities.

ERN METHODS IN EDUCATION.[1]

R lectures delivered between 1899 and 03, by M. Laisant at the Psycho-physio-gical Institute in Paris, and now published form, provide material for an interesting son between French and English methods ation. The lectures have the following L'initiation mathématique," " L'initiation e des sciences physiques," " Éducation que et psychologie," and " Le problème ication." M. Laisant's thesis consists ly of an energetic protest against widely t methods of teaching which depend exclusively upon the cultivation of the erbal memory, and a vivacious champion- plans of instruction which aim at the nent of a scientific attitude of mind. The s continually impressed by the fact that ements intended to improve mathematical and to encourage more rational courses ific instruction, which have already had nd influence on the work of English are being also enthusiastically advocated ch educational reformers.

reading the lectures, we are led to the con- hat M. Laisant, at the time of delivering ures, was unfamiliar with the changes ave taken place in recent years in the of mathematics—especially the teaching ietry—in British secondary schools. In l lecture he says, that on certain points, y that which concerns the teaching of y, English education is *plus pitoyable* than rance. He continues " elle semble avoir o plus pour objet de déformer l'esprit que opper l'intelligence, lorsqu' elle impose la a par cœur du texte d'Euclide." The mathematical syllabuses of our public ig bodies, the large number of excellent ks for schools on the " new " geometry, practical work which is so distinctive of our modern mathematical instruction, ll show M. Laisant how mistaken he is in g that English boys are taught geometry y set to learn propositions of Euclid by

re in complete sympathy with M. Laisant dvocacy of the experimental teaching of

But after reading his second lecture science masters will be inclined to ejacu- the common practice in the better schools country is in advance even of the ideals efore French teachers of science by M.

Our teachers long ago decided that it is gh to perform simple experiments before in the hope that the more original boys ed to repeat the demonstrations for them- leisure hours. It may fairly be said that non plan is, in our schools, to set boys to nt in suitably-equipped laboratories and them by simple pieces of research work of their own to discover the fundamental laws of science. It is so much the custom just now to insist that foreign teachers do much better than our own that we recommend M. Laisant's second lecture to science teachers as providing evidence, at least in one direction, to the contrary.

After all, these are but two of the many interesting questions discussed in the lectures. M. Laisant is always inspiring, and he has an unusual power of clear exposition. We heartily commend his volume to British teachers as a stimulating and helpful addition to pedagogic literature.

ation fondée sur la Science." Par C. A. Laisant. Préface aquet. xlv. + 153 pp. (Paris: Felix Alcan.) 2.50 francs.

THE THESMOPHORIAZUSAE OF ARISTOPHANES.[1]

IN reviewing the first volume of Mr. Rogers's " Aristophanes " we indicated our high opinion of its merits. The present instalment is quite as good, considering the difficulties of the subject. Translation, commentary, and critical notes are all full of fun, sparkle, and good sense. It is a delightful book. When we read the Bekkers and the Hermanns, the feeling of solemnity grows upon us, or our brain is dazed by the mass of uncorrelated facts, important or unimportant, which are presented for our digestion. Mr. Rogers makes even textual criticism bright, so that we have read through his Appendix, a thing impossible to do with such things as a rule. " Blaydes makes several conjectures, but does not mean any of them to be adopted." What a clever description of a whole school of critics in one sentence! We find ourselves smiling at last, even if Mr. Rogers writes: " σύ γε Hermann, Meineke, Holden ": there must be some joke, then, could we but see it.

The " Thesmophoriazusae " is not a school-book, but it is very clever; and an edition is all the more welcome because there are so few for this play. Mr. Rogers might be more generous of his Greek citations, but otherwise the commentary is excellent. He has an unfailing literary tact, and his renderings are often brilliant. The introduction, which deals with the date and circumstances of the play, offers a new interpretation of the word μέση applied to a day of the Thesmophoria. This has been usually taken to imply that the festival had an odd number of days, whereas we know of four: Mr. Rogers explains it as the Intermediate Day between the Descent into Hades and the New Birth of Persephone. This certainly explains the difficulties, and seems to be right.

The translation is partly a paraphrase, as the nature of the subject makes it advisable to be. It shows the same lightness and grace, the same pointed wit as the earlier ones. All classical scholars should have this book.

[1] " The Thesmophoriazusae of Aristophanes." A Greek text revised, with a free translation into English verse, Introduction, and Commentary, by B. B. Rogers. xliv. + 229 pp. (Bell.) 7s. 6d.

THE SCIENTIFIC ASPECT OF THE TEACHER'S WORK.[1]

EDUCATION is beginning to take a new meaning in the light of modern biological, physiological, psychological, and hygienic research. The function of the teacher is expanding. So much has been added in recent years to our knowledge of the principles of life and growth, of the working of the human organism, and of the conditions of healthy and normal development, that it is possible to hope for and expect a scientific guidance of human growth not only towards individual fitness, but towards a higher human perfection. This scientific guidance of growth is the function of the future teacher. He will come to be recognised as more than an instructor in English, classics, or mathematics. He is the most important factor in the highest of biological processes. For education in biological terms is the deliberate adjustment of a growing human being to his environment. And it is the teacher who directs a considerable part of this process. The environment of the child is partly physical and partly psychical. Neither side can be neglected. Science has shown us that the two sides are intimately, if mysteriously, connected, that both together make up the true human environment. Biology and physiology are now prepared to equip the teacher to deal with the physical adjustment, as logic and psychology have assisted with the psychical adjustment. The organised knowledge of the principles of human growth will constitute the science of education—the teacher's true professional secret. When he has mastered this science the teacher is prepared to educate as well as to instruct—to further the "superior adjustment" of youthful lives to their complicated environment. He must know, in addition to subjects of instruction, (1) the nature of the growing organism; (2) the physical and psychical environment best suited to its full and healthy growth. "He should also," in the words of the Inter-Departmental Report on Physical Exercises, "have practical experience of many of those forms of investigation which are grouped under the heading of child-study."

The two books now before us are worthy of careful study by every teacher who would have an insight into the scientific basis of his work. Mr. Kirkpatrick in his "Fundamentals of Child-Study" has in a clear and comprehensive way brought together the results not only of his own experience and the enlightened experience of other students, but also of the most recent biological and psychological thought as it bears upon the problem of education. He calls it "a discussion of instincts and other factors in human development with practical application." But his discussion really covers the whole ground of physical, intellectual, and moral education. Each cl the book is made doubly valuable by the s exercises for students which are appende hints and detailed references to further re the subject. The book will awaken not or interest in the subject, but a new and sti sense of the scientific possibilities of a career. There need be no dull routin scientific teacher.

Prof. Mosso's "Fatigue" is a master the admirable translation of it now p with the author's sanction and supervi enable every one to become familiar with writer of this notice owes much to the would appeal to every teacher to read it a it, and carry its wisdom and its warnings with him. For it was Prof. Mosso who p made known that fatigue is blood-poiso that mental fatigue and physical fatigue brain fatigue.

Whatever be the subject which an teaches, he cannot afford to be ignora science which is at the basis of educatio this is fully realised, teaching as a profe not be far from its kingdom.

[1] "Fundamentals of Child Study." By Edwin A. Kirkpatrick. 384 pp. (New York: The Macmillan Company. 5s. net.
"Fatigue." By Prof. Mosso, of Turin. Translated by Margaret Drummond and W. B. Drummond (Swan Sonnenschein.) 1904. 334 pp. 4s. 6d.

THE ASSOCIATION OF HI MISTRESSES.

THE annual conference of the Association of He was held on June 12th at the Mary Datchelor Scho Camberwell, Mrs. Bryant, president, in the chair. bers present numbered 165. The presentation of n to the president having taken place, and the r Executive Committee adopted, reports were receive committees appointed to consider (*a*) educational tion; (*b*) training of special teachers in junior and work; (*c*) relative values of examinations; and (*d*) of secondary education for girls.

The President in her address dealt with the qu correlation of the school stages of education. Se tween primary, secondary, and tertiary education i she said, partly by congenital class distinctions and the life for which education prepares, but mostly in the popular notion of the educational aim. D more practically verified thinking and more scient practice are necessary for the elimination of cc and the resulting dogmatism, contradiction, and diversity. Far above the cultivated intellect and formed habit of will is the importance of turnin to purpose, and the beginning of sound educatio the development of the child's interest in all sort interesting things. The primary course of educ classes should aim at a wide intellectual interest, of life, steady discipline, and the development of i all work done. In the secondary stage there mus tration in the curriculum; but the child's wid human interest, the germ of liberal education in t be fairly represented, neither science, languages, art being omitted, lest the humanising influences years be nullified. In the third stage, the claim education may yield for a time to the plain special training. It is, however, by his presen

little child's wide interest in the varied world that the trained specialist secures his freedom from the limitations of professional short-sight.

The following resolutions were carried unanimously:—

(i.) That in view of the forthcoming issue of supplementary Registers, the Association of Headmistresses desires that evidence of a good general education be required in addition to the qualification in the general subject.

(ii.) That the Association welcomes the proposal to constitute a college of secondary teachers, and desires to co-operate with other recognised associations in carrying it into effect.

Papers were read by Miss Burstall on "Methods and plans by which existing secondary schools could meet the requirements of the new regulations with regard to the secondary education of intending pupil teachers, (*a*) as pupils, (*b*) as half-timers"; by Miss Easton "On the best means of selecting at an early age candidates for scholarships and bursaries," and by Miss Foxley on "Co-ordination of curricula to facilitate the passing of elementary-school pupils into secondary schools, and correlation of curricula among secondary schools of various types in a given district."

The afternoon session was devoted to papers on "Higher Biblical Study," by Miss Wolseley-Lewis, and "The Report of the Mosely Commission in reference to Co-education," by Miss Collin.

OXFORD MEETING OF THE CLASSICAL ASSOCIATION.

THE first regular meeting of the Classical Association of England and Wales at Oxford on May 27th and 28th passed off very well. The arrangements of the local committee, under the direction of the President of Magdalen College, Mr. Charles Cookson, contributed no little to this result. On the attractive conversazione and Mr. Macail's brilliant oration upon the place of Latin and Greek in human life we have only space to touch.

Of the items of business transacted the most important were the adoption of a constitution, the election of a council in the main identical with that chosen at the inaugural meeting, but with the addition of the Attorney-General, Prof. P. Gardner and Mr. Mackail, for some time past the acting treasurer, and the settlement of the subscription now definitely fixed at five shillings annually, with an entrance fee of five shillings, which, however, in the case of those who join before the end of 1904, will cover the first year's subscription as well. It was agreed to hold the next meeting in January, 1905, the place chosen being London. The Association gave an earnest of its intention to be practical in passing a resolution for the appointment of a committee to consider the small but troublesome questions of the spelling and printing of Latin texts, the committee to confer with the Assistant-masters' Association on the subject.

Mr. Mackail's address was preceded by two speeches, the first one of welcome by the Vice-Chancellor of Oxford, Dr. Monro, who dwelt upon the present activity in classical research and the illimitable field that was open to it, and the second one by the Master of the Rolls, who, in well-weighed words, pointed out how wide was the circle to which the Association's objects appealed, and how far from narrow or aggressive was the spirit in which it was founded. Prof. G. G. Ramsay, as President of the Scottish Association, gave a hearty welcome to the new-founded body, and Admiral Sir C. Bridge attested the utility of classics to the naval officer. The President of Magdalen referred to a fact which members of the Association and others would do well to remember, that the Association as such does not meddle on one side or another in matters which, like compulsory Greek, are the subjects of academic controversy.

Mr. J. W. Headlam devoted the first part of his paper on the teaching of classics in schools to clearing the ground. The real question of the school curriculum was not whether the education was to be science or classics, but whether the humanistic element of our education was to take the form of classics or of modern languages, English and other subjects grouped together as modern education. He considered that the chief weakness of the present classical teaching was in the excessive stress laid upon the linguistic side, and in particular on its grammatical portion. Greek and Latin composition, again, claimed too much of a schoolboy's time. If these were restricted, the thought and subject-matter of the classics would have a better chance. In conclusion, Mr. Headlam referred to the unique advantage which classics had of offering all that was educationally valuable in them within a very narrow compass.

Mr. A. Sidgwick urged the desirability of inquiry and experiment. He would not have the classics taught to the wrong people. To some minds Greek accidence offered very great difficulties. Methods of teaching could and should be improved, and teachers should be trained.

Mr. R. C. Gilson considered that our difficulties arose from the truncation of the old classical course, which was good in itself, but needed more time than could now be spared. Less Greek should be taught, less syntax, but hardly less composition.

The Warden of Wadham put in a plea for interlinear translations as an instrument of teaching.

Canon Lyttelton hoped that this meeting would bring about a friendly conference between leading men in classics and science with a view to arrange a *modus vivendi* between classics and science in secondary schools. The discussion then became somewhat desultory, and calls for no special remark.

OXFORD LOCAL EXAMINATIONS. SET SUBJECTS FOR 1905.

Preliminary.

Religious Knowledge.—(*a*) History of the Kingdom of Israel from the Disruption to the Fall of the Northern Kingdom, (*b*) St. Mark, (*c*) Church Catechism.

English History.—Either the Outlines from 1066 to 1399, or the Outlines from 1399-1603, or the Outlines from 1815-1871.

English Author.—Either Scott's "Ivanhoe" or "Poems of England," Nos. xi.-xvi., xxv.-xxviii., xxxii.-end, by George and Sidgwick (Macmillan).

Geography.—Full knowledge of England and Wales, and a general knowledge of (1) elementary geographical terms, (2) Europe.

Elementary Latin.—"Tales of the Roman Republic," Part I., by J. B. Allen (Clarendon Press).

Elementary Greek.—Abbot's "Easy Greek Reader," Parts I. and II. (Clarendon Press).

Elementary French.—Macé's "Contes du petit château" (Hachette).

Elementary German.—Niebuhr's "Heroengeschichten," edited by E. S. Buckheim (Clarendon Press).

Junior.

Religious Knowledge.—(I.) Either (*a*) History of the Kingdoms of Israel and Judah from the Disruption to the Captivity; or (*b*) St. Mark; or (*c*) Prayer Book.

English Literature.—Either Shakespeare's "Julius Cæsar" or "Merchant of Venice," or Scott's "Ivanhoe," or "Poems of England," by George and Sidgwick (Macmillan).

History.—Either (*a*) Outlines of Roman History from 343 B.C. to 146 B.C.; or (*b*) Outlines of English History from 1066-1399 with special questions on the period 1154-1216; or (*c*) Outlines of English History from 1399-1603, with special questions on the reign of Elizabeth; or (*d*) Outlines of English History from 1815-1871, with special questions on period 1830-1856; or (*e*) Outlines of General European History from 1815-1871.

Geography.—General: (1) Geographical Terms, (2) Physical Geography, (3) North America and the British Empire. Special: United Kingdom.

Latin.—Cæsar, De Bello Gallico IV.; Virgil, Aeneid III.

Greek.—Xenophon, Anabasis I.; Scenes from Sophocles, Ajax (Clarendon Press).

French.—"L'histoire d'un conscrit," by Erckmann-Chatrian.

German.—Hauff's "Karavane."

Senior.

Religious Knowledge.—(*a*) History of the Kingdoms of Israel and Judah from the Disruption to the Captivity; (*b*) St. Mark; (*c*) St. Mark in Greek; (*d*) The Epistle of the Hebrews; (*e*) Church Catechism, Morning and Evening Services, the Litany, and the Outlines of the History of the Prayer Book.

English Literature.—Shakespeare's "Julius Cæsar" or "King Lear"; or Chaucer, Sweet's "Second Middle-English Primer" (Clarendon Press); or "Poems of England," by George and Sidgwick (Macmillan).

History.—Either: (*a*) Outlines of Roman History from 343 B.C. to 146 B.C., with special questions on the Second Punic War; or (*b*) Outlines of General European History from 1815-1871; or (*c*) English History from 1066 to 1399: or (*d*) English History from 1399 to 1603; or (*e*) English History from 1815-1871.

Geography.—In addition to general geography, a full knowledge of British Possessions in Africa and of Germany.

Latin.—Cicero, in Q. Caecilium Divinatio, In Verrem Actio Prima; Cæsar, De Bello Gallico III.-V.; Horace, Odes, Book III.; Virgil, Aeneid III.

Greek.—Herodotus IX., cc. 1-89; Xenophon, Anabasis I., II.; Sophocles, Ajax; Euripides, Hecuba.

ASSISTANT SCHOOLMASTERS AS EDUCATIONAL ADVISERS.

THE Assistant-masters' Association has recently been directing its attention to the improvement of educational methods in secondary schools. This is at it should be. To inspire the confidence of educational authorities and of the public, the Association does well to show that it is as interested in questions of educational practice as in the improvement of the status and prospects of assistant-masters. The assistance given by the Association to the Syndicate appointed by the Senate of the University of Cambridge to inquire into the studies and examinations of the University is consequently to be commended, and it may be hoped that the experience which has been gathered by the members of this important association may at all times be available when questions of educational procedure are being decided.

The Syndicate appointed by the Senate of Cambridge University to inquire into the studies and examinations of the University invited the opinions of the Association of Assistant-masters by interview and by written communications ... representatives. This invitation the chairman of the Associa... accepted, and the Education Sub-committee selected the ... lowing representatives: Messrs. T. E. Page (classics), E. Milner-Barry and A. A. Somerville (modern languages), R. ... Cholmeley (English), Francis Jones, C. J. L. Wagstaff, a... G. F. Daniell (science), F. S. Macaulay (mathematics), J. ... Holland (geography), and A. Kahn (economics). Opinio... were contributed which were presented to the Syndicate ... pamphlet form. These contributions to educational science a... reproduced in the *Circular to Members* issued by the Associ... tion. Further, Messrs. Daniell, Page, Milner-Barry, a... Somerville went to Cambridge on April 25th as a deputation ... meet a special session of the Syndicate, and replied to a series ... questions relating to the first public examination and referri... especially to the advisability (or otherwise) of (*a*) compuls... Greek, (*b*) increase in obligatory subjects, (*c*) tests in English.

The following extracts from the written communications ... these representatives of the Assistant-masters' Association to ... Syndicate appointed by the Senate of the University of Ca... bridge will not only interest our readers but are likely to pro... of service in the work upon which they are engaged.

In his introductory note Mr. G. F. Daniell, the chairman ... the Association, writes:—

"I consider that the whole system of admission to ... University contravenes the spirit which should govern ... relations between those responsible for education in the U... versity and in the schools respectively. I object to that distr... of the schoolmaster which reduces his work to 'preparing ... examinations.' It is surely not desirable that any glow ... enthusiasm, any spark of inspiration, that may be kindled in t... teacher should be quenched; and it cannot be doubted th... the Procrustean practice which fulfils, and only fulfils, th... externally-dictated syllabus is inimical to the students' inte... lectual growth. It cannot be the aim of the University ... direct the efforts of secondary schools into such a channel as wi... most readily secure an annual output of so many scholars ... pattern, else my objections would have, I admit, little force... But I maintain that greater freedom in methods and scope ... instruction would add dignity and power to the schoolmaster'... work, whereby the gain in life and individuality would outweig... any possible loss through lack of uniformity."

Mr. T. E. Page, in discussing the responsibilities of th... University so far as a liberal education is concerned, remarks: ... "An education which is too largely scientific, especially whe... 'science' means applied science, is an education which is ... stunted, illiberal, and inhuman. It needs for its completion an ... equal acquaintance and sympathy with art, poetry, and good ... letters, with the history of human struggles for law and freedom, ... of human gropings after truth, morality, and religion. These ... things, too, are essential parts of a full mental training. They ... may not help a man 'to gain the whole world,' but they are ... necessary if he is not 'to lose his own soul,' and it is exactly ... here that the defence of classical study rests upon the rock. ... The whole of these subjects come within its purview, and they ... do so not as dead things but as real existences with which all ... modern progress is in close and living relation. . . . The ... future of education in the higher schools rests with the Univer... sities. It rests with them whether our schools shall still pursue ... those humaner studies which, in spite of unnumbered faults ... have always been in them a quickening and ennobling influence. ... The struggle is not between science and literature, for no one ... who loves either can wish that these two should ever be divorced, ... but is a struggle against a false science which, ignoring all that ... is highest in human nature, finds its best satisfaction in becoming ... the servant of commerce."

Dealing with mathematical studies, Dr. F. S. Macaulay refe...

to the present movement of reform. He states that; "So far as the movement was concerned with eliminating all that was of little value for future progress, and improving those parts which were presented in a wrong light or wrong order, it commanded everybody's approval. But the movement seems to have developed into an attempt to remove all difficulties, and to make the path of the learners an easy one. Possibly the most strenuous advocates of change would not admit this, but it seems to be the present tendency, and I fear that it will prove a fatal obstacle to the proper teaching of mathematics if not arrested. Few would, I think, maintain that the main object in teaching mathematics to the average boy is to develop ideas already dormant in his brain, and to teach him to perform some simple operations mechanically. But this is all that 'mathematics made easy' can do for him, and such easy mathematics will be useless and distasteful to boys of good intelligence. . . . We have already gained some experience of the effect of the change in elementary geometry. So far as my experience goes, the result has not been satisfactory . . . . . in reviewing the work done I am forced to the conclusion that very little has been learnt, and that more might have been learnt in the time given to the subject.

Mr. Milner-Barry directs attention to his article in THE SCHOOL WORLD for March, 1901, entitled "A Modern Language as an Alternative to a Classical Language at the Universities," and giving the results of his personal experience, he remarks:

"As Greek is a compulsory subject at the universities, the general run of boys intended for the trained professions might be expected to be turning their attentions to Greek, Latin, and French; but it can easily he shown for some schools—and I instance Mill Hill as one—that there is a tendency for a boy to take Latin, French, and German, and to trust to private tutors to help him through his entrance examination in Greek. Leaving apart the boys from Mill Hill who have gained classical scholarships at the universities, I find that, of those who have won scholarships in other subjects, just fifty per cent. won them from the semi-classical side when they were working at Latin, French, and German. Their Greek was subsequently acquired, and cannot be said to have been a factor of any importance in their educational equipment. I submit, therefore, that the retention or abolition of Greek as a compulsory subject is a problem which is very acute for anyone who is thoroughly conversant with dealing with the general principles of a school time-table, and whose duty it is to try to reconcile conflicting interests. For many boys it is an artificial subject, and its abolition as a compulsory one would probably re-act for the benefit of other subjects, while in no way impairing the splendid training it affords for boys of exceptional gifts."

Mr. R. F. Cholmeley takes up the subject of the influence of the university on literary studies in schools, and in the course of an interesting paper remarks:

"We have learnt that the old curriculum not only brought its pupils up to the gates of the university in a state of remarkable ignorance of things in general, but had a tendency to encourage them to remain in that state of ignorance; and, while admitting that to be ignorant of many things is not necessarily to be uneducated, we have discovered that to be ignorant is not necessarily to desire knowledge, and that contented ignorance is too often the result of the best education in England. Now ignorance of science can be remedied without difficulty; for the elements of science can be taught intelligently, and to learn them intelligently is a training for the mind. With literary subjects it is different. To teach boys literary subjects in their own language, as an integral part of their education, and to carry that teaching on into the universities, is a thing which has not yet been systematically attempted; and yet, if it should be attempted at all, it requires more system than any other kind of teaching, for the very reason that it is so difficult to make it systematic. . . . It is possible in a few words to say by what aims it should be inspired, and by what considerations it should be limited. Even in the case of literary subjects the chief aim of education should be kept in view; training should not be subordinated to instruction. But the kind of training that is given by linguistic or mathematical studies is not to be looked for. The use of the purely literary part of a boy's education is to teach him to read and write intelligently, not primarily to fill him with facts, and still less to fill him with other people's opinions. The kind of reading that should be led up to may be illustrated by the list of books sometimes recommended to candidates for scholarships in modern history. The examiners for the Brackenbury scholarships at Balliol used to give such a list, including, if I remember right, Eadmer's 'Vita Anselmi,' Joinville's 'St. Louis,' Hallam's 'Middle Ages' (ch. ix.), Bagehot's 'English Constitution,' Guizot's 'Civilisation en Europe,' Dicey's 'Law of the Constitution,' Walker's 'Political Economy,' and Macaulay's 'Essays.' If to this list were added the historical plays of Shakespeare and the novels of Thackeray, we should arrive at a fair conception of the sort of mental activity which might be produced by an education in which the study of literary subjects had its proper place."

We commend the May issue of the Assistant-masters' Association's *Circular to Members* to all interested in the discovery of the ideal curriculum for secondary schools.

POINTS OF VIEW.

AT present it seems to me that the true policy for the nation is to enlist the co-operation of every educationist, whatever his denomination, in what I may properly call educational progress. The more we can get it to be thought about the more will our local, and even our religious, difficulties go into the background. The history of the last century shows that religious controversy has always been less where educational progress is greatest. Therefore I look forward with hopefulness to a widening of interest in educational progress, because it will put into their proper place those magnified difficulties which are supposed to beset them in regard to religious matters.—The ARCHBISHOP OF CANTERBURY at the annual meeting of the National Society.

I HAVE found nearly all children rather keen to know about natural and astronomical things. They do not always care for machinery. Boys sometimes care about such things as a bicycle or a pump, but girls hardly ever do. They may easily be made tired with science teaching of an unwise kind, but, if they are initiated in a kind of science which children ought to be interested in, then it is wholesome training for them all. I do not believe in having schools where boys having an aptitude for science shall learn nothing else, and schools where boys who have an aptitude for letters shall have nothing but a literary education. I do not agree with premature specialisation.—Sir OLIVER LODGE, F.R.S., at a Joint Conference on Secondary Education, Birmingham.

THE old mechanical theory which seems to have held sway over education even longer than over many other human institutions is at length ousted by the evolutionary theory that a child is not a thing to be squeezed into shape by education, but a plant to be tended, pruned, and developed. In a word, the

child is not to be fitted to the teaching, but the teaching to the child. This transvaluation of values between the two factors in the problem marks a new era in English official education. It is no exaggeration to regard the Board's manifesto as the Children's Magna Charta. Nor is the interpretation of their rights under the new rescript either narrow or niggard. Not only the natural capacity of the child, but his surroundings, are to be taken into consideration. His chances in life are not to be whittled down by confining his education to the mere utilitarian aims of the station in which he is born. On the other hand, it is not to be so general, so unconnected with his surroundings as to fit him equally for all callings, or rather, for none.—Mr. CLOUDESLEY BRERETON, "Revolution at the Board of Education." (*Monthly Review*, June, 1904.)

AT the present time what are called "the humanities" have come to stand for elasticity and variety in the curriculum, and science has come to stand for rigidity and exclusion. There was a time when exactly the opposite was true, when very little was taught in the secondary schools but humanities, and those in a singularly inhumane manner, and hardly any room at all was allowed for science and mathematics. But I hold that it is sheer nonsense to contend that that is the case at the present time. We are all of us aware that a reaction came against this one-sided literary training—a reaction which has now been in full swing in this country for forty years. Part of it—and, as it seems to me, the more valuable part of it on the whole—came from inside the schools themselves.—Mr. R. CARY GILSON, Headmaster of King Edward's High School, Birmingham, at a Joint Conference on Secondary Education, Birmingham.

THERE may be here and there a fine and sparkling genius born in cottages: there may be some bright souls amongst the poorest of mortals. . . . Why should this world be deprived of all the benefit that might be drawn from such ingenious minds, under the care of a happy education? Let them at least be taught to know their letters and have a way made for their brighter talents to discover themselves. Diamonds of a noble lustre are taken from common earth, and every diamond is rough or cloudy till it is cut and polished. If there should happen to be a vein of silver mixed with the leaden ore, why should it be denied the favour of the refining pot, since Nature seems to have made it on purpose to shine and glitter?—ISAAC WATTS. (Quoted by Prof. Foster Watson in the *Gentleman's Magazine*.)

WE must at all costs put an end to the scandal now common enough of allowing a teacher raw from the University without any training whatever to come into the class-room and get his practice at the expense of the pupils. If a man is put on the right lines as to general principles, and has opportunities of applying his principles to actual teaching, he has all the rest of his life in which to perfect his practice. I have always looked at this question more from this point of view of the necessity of theory—and of the habit of thinking scientifically about education—than from any other. For the one thing needful in this country, to my mind, is to think scientifically and to settle our educational questions on broad educational grounds, not on grounds of mere expediency and convenience. Therefore I should urge very strongly that in this precious year, which is going to be given to training, the smallest possible amount of time should be given to practice, and when once competence to take a form is secured, the rest of the time should be given to theory.—Mr. F. J. R. HENDY, Headmaster of Bromsgrove School, at a Joint Conference on Secondary Education, Birmingham.

THIRTY-TWO Michigan high schools show in Latin a decre of 1,050 between the years 1898 and 1902—a loss poorly co pensated for by a gain of 326 in twenty-three schools during same period. Twenty-seven schools teaching Greek to 4 pupils have been reduced in four years to nineteen schools wi 113 students. These are the facts which make the subject the present discussion one of vital interest to every classic teacher. . . . Reports from various parts of the State sho that, on the average, 50 per cent. of those who take up Lat do not continue it two years. Pupils give as the reason f dropping the subject that it is too difficult, and takes too mu time; teachers say it is lack of interest caused by the enormo difficulty of making the subject-matter of the first two years Latin as interesting as that of other subjects. Greater intere must therefore be aroused, and that early in the course. I ha found the largest percentage of failures during the first fi months. The first signs of discouragement should be the sign for shorter lessons in advance and more review work. Th teacher must depend largely upon variety in the form of th review or drill work to keep up the class interest. Among th most effective means is the formation of original sentences eith for oral or for written work. Written tests, not to exceed t minutes in length, should be given at least once a week. The keep everything fresh in mind, and take away the terror, a often the necessity, of the formal written examination. Engli derivatives never fail to arouse interest, and appeal to the cl as one of the most practical phases of Latin study.—Miss CLA ALLISON, Hastings High School, Mich., U.S.A. (From *T School Review*, Chicago, May, 1904.)

HISTORY AND CURRENT EVENTS.

THERE is a Bill in Parliament just now which proposes abolish the light dues now levied on ships frequenting Brit ports. In seems that in this matter we are similar to Swed and Norway and to Turkey, but to no other European Pow Others charge the expenses of lighting their shores on t general public. We lay the burden on those who most direct get the advantage. The question is one of incidence of rate in which the respective advantages of ease of collection an equality of burden must be balanced one against the othe Some of us are old enough to remember the toll-gates that hundred years ago abounded on the high roads of the country Indeed, there may yet be a few survivors, and some bridges ar still thus furnished. The theory was, of course, that those wh used the roads should pay for them, but the expense and in convenience of that method of collection came at last to over balance the other considerations, and the toll-gates were re moved, though the toll-keeper's cottage often still survives t cause a slight wonder as to its shape and position. How would some of those near London and other great centres cope with the present traffic?

KING EDWARD'S references to the history of Waterford o his visit to that town this spring have somewhat puzzled us. O course, we know that "Danes" founded the town, as well a Dublin and other ports in Ireland, and that therefore th Waterford folk might well receive the daughter of a Danish king But when he spoke of it as an *urbs intacta*, and referred to it loyalty to one of his predecessors, we wondered what th references could be. We find that it was captured by Strong bow in 1170 in that so-called conquest of Ireland which was th beginning of woes to both England and Ireland. We also rem of Cromwell's siege in 1650, which was, it is true, unsuccessful but the town was taken by Ireton the following year. It wa

red by William III. in the well-known Boyne cam-
ie town was therefore "loyal" to both Charles II.
II., but on those occasions was not "intacta." The
reference we could find was to the action of the
men in an attempt to take Perkin Warbeck at sea.
was then certainly "intacta" and loyal, but they did
d in catching the impostor who landed in Cornwall
l ruin.

NRY STANLEY'S death early in May recalls to us the
s activity in Africa. From 1871, when he first won
nding Livingstone, till 1887-8, when he found Emin
did much towards that revolution which changed
n a half-known land into a complete series of spheres
:e for some four or five of the European Powers.
ro, beyond the coastlands and their immediate back-
frica was an unknown region gradually being revealed
plorer and the missionary. Science and the Gospel
their own way. But with Stanley's descent of the
ade successful by methods unused by Moffat and
ie, came the era of European government and the
e for Africa." Ideals changed, and instead of de-
he negro and other races, Europe has gradually come
them for other purposes than their own good. The
vites great discussion, which we must here avoid.
the current troubles in German Africa and other such
ne reads with a little uneasiness of the appearance of
nism" which, "under the guise of religious teach-
hes the doctrine of Africa for the native races."

MILNER is "more than an Englishman; he is an
t, and is prepared to see a federal council sitting in
ydney and in South Africa." So he is reported as
ently at Johannesburg. In which direction would you
order to reach successively the places named in Lord
peech? Which parts of the British Empire would be
ected by a line joining these places? These questions
it notice or explanation to a class of fourteen-year-old
ght give our readers some interesting answers. The
e would suggest would be (*a*) westward, (*b*) India, but
the British Isles. The West Indies also lie out of the
ake a map of the globe, put the Western Hemisphere
ht (or, better still, work out the problem on a globe),
we shall see how far the British Isles are from being
: of the Empire. How long will it take the geo-
groupings to overcome the other forces which still
don-Westminster the capital?

ERAL MEETING of the Incorporated Association of
Mistresses was held on May 28, at the Clifton High
n the invitation of the Western Branch, and by the
nission of Miss Burns. After a short opening address
president, Miss Layton, of the Cardiff County Inter-
School, read a paper on Welsh secondary education
intermediate school system. Miss Ker, a member
Education Committee of the Gloucestershire County
and Miss Palmer, of the Education Committee of the
shire County Council, then gave an account of the
f scholarships proposed or adopted for their respective

Miss Galaway explained the Bristol scholarship
and Miss Young the scheme for Bath. After some
s and discussion, the meeting terminated with votes of
o the Western Branch and to Miss Burns for their
ty, and to Miss Ker for her address.

ITEMS OF INTEREST.

GENERAL.

THE article on "Junior County Scholarships," contributed by Dr. R. P. Scott to our March issue of this year, was shortly afterwards published separately as a pamphlet. In this form the publication has reached a second edition, which is, we are glad to find, attracting much attention on the part of those whose duty it is to formulate a scheme for the award of scholarships in London under the new conditions which have arisen under the recent Act. The essay, to which several appendices have been added, may be obtained from our printers, Messrs. John Bale, Sons and Daniellson, Ltd.

A PORTION of the regulations for the Oxford Local Examinations, 1905, has been issued for the information of local secretaries. A second complete edition will be ready by July 1st, and may include additional announcements. Numerous changes have been introduced in the regulations, including alterations affecting the examinations in mathematics. The system of alternative pass or advanced papers has been discontinued, and an oral examination of senior candidates in French and German has been arranged. Sundry changes, too, have been made in the time table of the examinations. The special subjects and set books for 1905 are printed on page 269.

THE Birmingham Education Committee has decided that the fee for scholars admitted by examination to the Council secondary schools after the ensuing summer vacation be £1 per term, or £3 per annum, provided that a number of free admissions shall be given, so that not less than one quarter, nor more than one-third, of the pupils attending these schools receive their education free. Mr. Cary Gilson, headmaster of King Edward's High School, Birmingham, in proposing this, said he should not be in favour of charging a fee if he were not quite certain that the proposal was accompanied by adequate means for providing that boys and girls of exceptional ability should obtain their secondary education in the Council schools without any impediment whatever, however poor they might be.

AT a meeting of the National Association of Manual Training Teachers held on June 4th, the references to manual training in schools in the reports of the Mosely Educational Commission were discussed. Mr. Mosely said that communications with people in different parts of the world had forced upon his mind the fact that a good education was at the bottom of successful business transactions. The broadminded way in which American engineers in South Africa tackled the propositions brought before them first excited his interest in the system of education in the United States. He believed that Professor Armstrong hit the nail on the head in his report when he said that it was the fourth "R" which made all the difference between the educational results here and in America. In the United States children are taught, not only how to read, but how to reason. That is the spirit which permeates the whole of the United States, and it is that which has largely helped to build up their commercial success. Prof. Armstrong observed that there was one criticism to be made of manual training schools in the United States, namely, that they tended towards being trade schools. If manual training is to be introduced into English schools and made of real educational value, it must be a broader subject than it had been hitherto. The erection of manual training schools on American lines—a magnificent metal workshop here and a magnificent wood workshop there—is, Prof. Armstrong thinks, unnecessary, and a large supply of costly machinery of

one kind is also not essential. A variety of occupations rendered possible to boys is wanted, and all manual training should be carried on, to a certain extent, with reference to local requirements

THE annual exhibition of work executed in the London County Council schools—formerly known as the London Board Schools—was held at the Medical Hall, Victoria Embankment, London, from June 13th-18th. The exhibition consisted of work from both day schools and from evening classes. The exhibits from day schools included exercises in drawing, manual training, needlework, domestic subjects, elementary science and nature study. Interesting evidence of the good work done in the schools for the blind, deaf, and the physically and mentally defective, was afforded by a large number of exhibits of a varied character. In addition to examples of work illustrating the instruction in the subjects already enumerated, the evening schools also sent exhibits from the classes in dressmaking, millinery and fancy work. Those persons interested in education who have visited these exhibitions year by year will agree that they provide conclusive evidence of the excellence of the work being accomplished in the primary schools of the metropolis and illustrate graphically the revolution which has been effected in elementary education during the last thirty years. If the London County Council succeeds in maintaining the high standard reached under the administration of the late School Board of London it will have done well: should it succeed in effecting still further improvement, it will have every reason heartily to congratulate itself.

A NATURE-STUDY museum, which has been provided by the Library Committee of the Stepney Borough Council, in St. George's Recreation Ground, Cable Street, London, E., was opened by Sir William Collins, chairman of the London Education Committee, on June 3rd. The museum is intended chiefly for children, and is placed in the disused borough mortuary. The collection embraces all kinds of smaller living things, and is the result of efforts made by Miss Hall, the curator, who wished to have an opportunity of teaching children something about nature. Sir William Collins, in declaring the museum open, intimated that the L.C.C. would probably take steps to further the study of natural objects, which would do a great deal to create in the younger generation a longing to get back to the land.

THE Federation of the Grocers' Associations of the United Kingdom is directing attention to the matter of technical education. The Eastbourne and District Grocers' Association has drawn up a suggested syllabus of lectures for those engaged in the grocery and provision trades. It is proposed to institute a course of lectures, which "will demonstrate theoretically and practically by means of experiments in the laboratory the constituent parts, preparation, and manufacture of soap, soda, candles, salt, glycerin, vinegar, alcohol, sugar, cheese, butter, starch, and the cereals; the preservation of food; nature of preservatives; putrefaction and decay; tinned foods, etc., all most deeply interesting to those anxious thoroughly to know their own business." The suggested syllabus includes: elementary chemistry, so far as is necessary to understand the nature and substance of foods and adulterants; the nature and composition of foods, especially those concerning the grocery trade, classified as follows: (*A*) Organic—(i) nitrogenous, as proteids or albuminoids; (ii.) non-nitrogenous (*a*) fats, (*b*) carbohydrates, (*c*) vegetable acids; (*B*) inorganic—(i.) mineral salts, (ii.) water; (*C*) food accessories, such as tea, coffee, alcohol; the common adulterants of foods and their methods of detection; the decomposition of foods and alteration by keeping; the preservation of foods; the effect of cooking, of dampness and of age.

A holiday course in manual training in woodwork is to be held, under the auspices of the Examinations Board of the National Union of Teachers, at Brighton, from July 25th to August 13th. The Brighton Borough Council has placed at the disposal of the N.U.T. the well-equipped Circus Street Manual Training Centre, and the course is to be under the direction of Mr. E. Marriott, the director of manual training to the Brighton Borough Council, and of Mr. S. A. Switzer, instructor under the London County Council. Full particulars may be obtained on application to The Secretary, Examinations Board, 71, Russell Square, W.C.

AT the recent annual meeting of the Pupil-Teacher-Centre Teachers held at Bradford, Mr. G. W. Stone, of Salford, presided, and in his presidential address discussed the suitability of secondary schools as compared with pupil-teacher centres for the training of boys and girls intending to become elementary-school teachers. He expressed himself as not at all convinced of the alleged superiority of secondary schools as compared with pupil-teacher centres, and is of the opinion that no one has so far adduced a single fact in proof of the contention. Debating the question as to how far the high school is fitted to receive intending pupil-teachers for the two years preceding the apprenticeship, he said, the course of the elementary school is not merely a preliminary to the high school course, and a capable girl transferred from the elementary school to the high school for the two years preceding the pupil-teacher course would find herself behind the rest of her form in certain subjects, such as Latin, French, and mathematics, and possibly better equipped than the rest in the elementary school subjects. If the inevitable gaps in her education are to be filled up by class teaching, it is clear that the time of the rest of the class must be proportionately wasted: if the gaps are not to be made up, the pupil is unfairly treated. The only practicable way out of the difficulty is to establish separate classes for the intending teachers, and thus nullify the whole purpose for which they had been sent to the high school. The actual pupil-teacher period should, Mr. Stone thinks, in every case be spent in the pupil-teacher centre. Any other course will end in the neglect of the practical professional side of the pupil-teacher's training.

WE learn from the report for 1903-1904 of the Committee of Council on Education in Scotland, a copy of which has been sent to us, that one striking feature in the staffing of the Edinburgh Board Schools is the absence of the ex-pupil teacher as an assistant. Of a total of 1,047 teachers, only six are ex-pupil teachers, and these are to be found in the schools recently incorporated in the School Board district. It is also noteworthy that of the 681 certificated teachers employed 116 are graduates of a university. Experts are also employed for sewing, singing, drill, swimming, cookery, and woodwork. It is the rule of the Board to provide at the rate of one certificated teacher for every fifty in attendance, the headmaster not being included in this calculation; and the staff is so selected as to provide at least one certificated teacher for every class-room occupied by a class. Under such conditions a high quality of staff is assured.

THE Essex Education Committee, with a view to assist teachers in Essex to gain a knowledge of the gardening operations necessary for the successful working of school gardens, has decided to hold a holiday course in the principles and practice of horticulture. The course will take place at the biological laboratories and garden at Chelmsford, and will commence on August 8th, and meet daily for two weeks. Both men and women are invited to attend the course. The committee will defray travelling expenses once to and from Chelmsford, and will in suitable cases make a special allowance of 12s. 6d. per week towards the maintenance of candidates fulfilling the

conditions. Applications must be made to the County Offices, Chelmsford.

ie interesting pamphlets which reach us from time to the County Technical Laboratories, Chelmsford, it is nt that the Essex Education Committee is in earnest avour to improve agricultural education in the county educational interests of which it watches. We to the notice of those of our readers who are in agricultural education two recent booklets issued terprising educational authority, viz., "Market-day 903-4" and "Agricultural Education in Essex."

ational conference was held in connection with the al Exhibition held at the Botanic Gardens, Regent's lon, on June 7th, under the presidency of Sir William ir George Kekewich delivered an address on nature- its cognate subjects in education. Papers were read lian Clarke and others.

ncipal of a school near Liverpool writes to ask us to nasters and headmistresses that a man is going about persuading heads of schools—principally ladies' give him an order to insert an advertisement of their his "Home Guide," which it appears is merely a eceipts are given on a printed form with no heading, ure, of course, valueless. This bogus advertisement in the neighbourhood of Liverpool early in May, and previously in Manchester, the midlands, and some ie south coast.

d with profound regret the death of the Rev. Canon el, principal of St. John's College, Battersea, from

ERT BLAIR, assistant secretary for technical instruc- department of Agriculture and Technical Instruction, s been appointed by the London County Council as fficer of the Council for the administration of the Acts, at a salary of £1000 a year.

EGORY FOSTER has been appointed Principal of College, London, in succession to Dr. Carey Foster.

S. EDDINGTON, of Kendal, is senior wrangler this Eddington, who is a Trinity man, was educated at er-Mare and Owens College, Manchester. He is a Science of London.

D edition has appeared of Dr. Alexander Morgan's The Practical Teaching of Geography in Schools and which was first published in the *Geographical Teacher* 03, and afterwards issued in pamphlet form. The y be obtained from Messrs. George Philip and Son, 6d. net.

SCOTTISH.

tch Education Department has just issued "a f circular letters, 1898-1904, with explanatory m." The object in so doing is to gather together the culars of the Department in a form easy for reference, mpany them with such explanation as would enable onversant with technical details to understand the cy pursued. These letters and memorandum, though Mr. Graham Murray, may be regarded as the *mea vita* of Lord Balfour and Sir Henry Craik, as it ccupied with the organisation of education in uring this *régime*. The policy and aims of the t are clearly and fully disclosed, and an exceedingly nce is offered against the numerous attacks that have on the Department and all its ways.

THE general principles underlying the policy of the Department are summed up as follows: (i.) They contemplate three distinct grades of day schools, each with a well-balanced curriculum of general education, essentially but not exclusively humanistic, and ending in each type with a period of consolidation and concentration on the subjects essential to that type. Specialisation implying, as it does, a practical acquaintance with some related occupation, should be relegated to the Continuation Class system. (ii.) In subsidising education in whatever form, the Department have had regard to the characteristic national principle of dual control. Having satisfied themselves as to the general efficiency of a school, they desire to leave its internal economy to the teachers and managers themselves, unhampered by considerations of pecuniary results. (iii.) They propose to test the efficiency of schools, not by written examinations or prescribed syllabuses, but by repeated visits of inspection directed to ascertaining (*a*) the whole scope of the curriculum and its adaptation to local needs, and (*b*) the success with which the work proposed has actually been overtaken.

A DIAGRAM, after the most approved German style, illustrates the relations of the various forms of education under the Scottish system. The Department holds that the various grades of education are not successive stages which can be superimposed on one another, but parallel courses resting on a common foundation and crowned with different superstructures. The common foundation is the primary school. Above this, three types of further instruction are recognised—the supplementary course for pupils who leave at 14, the higher grade schools for pupils who stay on to 16, and the higher class for those who remain to university age.

THE general meeting of the Association of Headmasters of Secondary Schools was held in the Royal High School, Edinburgh. Dr. Marshall, in introducing a discussion on the Education Bill, said that he personally had always been a strong advocate of the municipalisation of education. He was certain that England was entering on a period of great educational activity, and through the municipalisation of her education would soon gain upon Scotland in educational matters. The question of how they were to deal with the Department would be an even bigger question in the future than it had been in the past. From all parts of the country and from Members of Parliament of every section the same protest had been raised against the predominance of the Department; not only on matters of principle, but on the smallest details under the new Bill, the Department would be more supreme than ever. He thought it was a very serious thing if the whole scheme of Scottish education was to be dictated to them by a Department in London. Education ought to be rooted in the national character of the people, and he would rather see their local authorities blundering on their own initiative than being guided in absolute wisdom by an external authority.

A MEETING of the Modern Language Association was held in Marischal College, Aberdeen, last month. Prof. Kirkpatrick, Edinburgh, presided over a large and representative gathering. The chairman stated that the joint committee of the Association and the German and Franco-Scottish Society had succeeded in getting rooms in Edinburgh University for the proposed vacation course. They would be able to offer English instruction in English literature and phonetics to foreign students, and, what was more important they would be able to provide instruction in German and French by the most eminent teachers of those subjects. Mr. George Smith, Rector of Aberdeen U.F.C. Training College, gave a paper on phonetics. He claimed that by the study of phonetics the teacher had the opportunity of using to the full the capacities of the pupils, and that something

was contributed to the awakening and building up of that phonetic sense which had been so largely lost because of the chaotic relation of orthography and pronunciation. In the discussion which followed, phonetics found many supporters, but Mr. Hein, Aberdeen, held that phonetics was an altogether indirect way of teaching modern languages, and that time was lost by the use of them. Resorting to the *argumentum ad hominem*, he challenged his own gift of English against that of any other teacher of modern languages who had learned his English by phonetics.

AT the House of Commons, the Marquis of Tullibardine introduced to Mr. Graham Murray, Secretary for Scotland, a deputation who urged that under the Scottish Education Bill increased facilities should be afforded for the teaching of Gaelic in Highland schools. Mr. Graham Murray, in the course of a sympathetic reply, said that the teaching of Gaelic was an administrative detail beyond the scope of the present Bill. The Scottish Department did encourage the engagement of Gaelic-speaking teachers for Highland schools, but the curriculum was a matter necessarily left to the decision of the local authorities.

IN the annual report of the Scotch Education Department, a Blue Book of 730 pages, there is a mass of interesting information on the progress that has been made of late years. It is a sign of increased administrative efficiency that while, during the year ended August 31st, 1903, the estimated increase of population in Scotland was 1·17, the number of scholars on the registers of schools under inspection increased by 2·2 per cent., with an increase of 3·5 per cent. in the average attendance. The number of schools under inspection was 3,149, with an average attendance of 669,289 children. 12,080 certificated teachers were employed, being one certificated teacher for every 55 scholars. Interesting sections of the report deal with the education of blind and deaf-mute children. The progress being made in secondary and technical education, and the measures taken to increase the usefulness as a means of study of the Museum of Science and Art in Edinburgh, are also described.

IRISH.

Two interesting pieces of news have emanated from Trinity College during the past month. Since Dr. Starkie was appointed to the presidency of Queen's College, Galway, there has been no Roman Catholic fellow. This deficiency has now been made good, as at the recent examination the first place and fellowship were obtained by Mr. S. Kelleher, who received his school education from the Christian Brothers in Cork. The new fellow is a brilliant mathematician, who gained the distinction on his first trial and on exceptionally high marks. The other news relates to the conferring of degrees upon women. It has been decided to confer upon three women honorary doctor's degrees, and one of them, Miss Mulvany, of the Alexandra School, receives the distinction of LL.D. for her eminent services in the cause of female education in Dublin. Trinity also proposes to confer *ad eundem* degrees on women graduates of universities in which women are granted full academic status, and also on women who have attained a certain prescribed status in universities which do not give degrees to women. The latter part of this proposal extends to women who have been in colleges like Girton and Newnham, but in their case the degrees will be limited to past students only. Many women who have sighed in vain for degrees at Oxford and Cambridge will no doubt avail themselves of this opening in Dublin. Will the action of Trinity have any influence on the older English universities?

AN influential meeting was held at the end of May in the Mansion House, Dublin, to consider the question of primary education in Ireland, and Dr. Macnamara, M.P., delivered an address on "The conditions of Irish Education." After remarking that it was impossible for things to remain as they were, he sketched a scheme of reform, in which he said the essential principles to be aimed at were: (1) the representative character of a new board of education, which he called a central national council; (2) its direct authority over all grades of public education; and (3) its direct responsibility to Parliament. Resolutions were passed dealing with the necessity of devoting part of the Irish Development Fund to primary education, of co-ordinating all the systems of Irish education, of improving the attendance of children, and of improving the salaries and pensions of Irish national-school teachers.

THE report of the Intermediate Education Board for the year 1903 shows that for last year the amount of the school grant paid to managers of Intermediate schools as the result of the examinations was £57,318 11s. This was divided among 262 schools, and of the four provinces Leinster received £22,916 10s. 5d., Ulster £15,573 6s. 9d., Munster £15,077 3s. 10d., and Connaught £3,571 10s. During the year the Board advanced £12,404 to managers of various schools, to enable them to provide equipment and appliances for the teaching of practical science. During half the year there was a system of temporary inspection, which the Board does not regard as satisfactory, and it lays special emphasis upon the necessity, in the interests of intermediate education, of bringing into operation, at as early a period as may be possible, an efficient system of inspection by the appointment of a staff of permanent inspectors.

THE new Intermediate Programme for 1905 has been published. Perhaps the most outstanding feature in it is the number of concessions made to the representations of teachers as put forward in various memorials last year. For example, students under the prescribed limit of age will be allowed to compete again in the same grade if they have not already obtained an exhibition of the highest value in that grade; students who qualify for exhibitions in courses different from those which they have selected will have their cases specially considered by the Board; in the three higher grades students who fail to obtain the percentage prescribed for a pass in some one subject, but who obtain at least 25 per cent. in that subject will be allowed to pass the examination if they obtain an average of 30 per cent. in the six subjects necessary for a pass. Other new important points in the Rules are: (1) Italian and Spanish are included in the subjects for honours; (2) the science part of the programme is developed, and the science courses for the third and fourth year defined, and it is laid down that passes in two or more of these courses will count as passes in two or more subjects; (3) in any foreign language it will be necessary to obtain at least 20 per cent. of the marks assigned for translation from English into that language in order to secure a pass, and 40 per cent. in order to secure honours; (4) prizes may be taken out not only in books, but also in philosophical apparatus, or other objects used for educational purposes, subject to the approval of the Board; and (5) the marks assigned to verse composition in Greek and Latin are increased to 20 per cent. of the total honour marks obtained by a student in Greek and Latin.

IN the programme we note the following points: (1) Composition is omitted from Greek in the preparatory grade; (2) the English and Irish history in the preparatory grade extends from the invasion of Britain by Julius Cæsar to A.D. 1400 instead of to A.D. 1200, and the junior grade history is

ed correspondingly; (3) the algebra courses are simplified made easier; and (4) the geometry course is altered, the ing being as follows: "An amount of knowledge will be cted approximately equivalent to that contained in," etc., of the more difficult propositions being postponed out of Euclidean order.

WELSH.

SS ELIZABETH P. HUGHES, formerly principal of the ridge Training College, is well known throughout Eng- as well as Wales. Since her return to Wales she is iving in Glamorganshire, and has recently brought a sug- n before the Glamorganshire County Council against the sion to the elementary schools of children under five years . Miss Hughes has lately been living for some time in , and was therefore able to point out that the Japanese do limit children to schools before seven years of age. In nd, the minimum age is six. A resolution was passed in of Miss Hughes' suggestion.

E Chairman of the Education Committee of the Denbigh y Council (Mr. W. G. Dodd) has recently given an inter- account of "The old and the new dispensation." Under d system there were in the county 73 officers, with salaries ther amounting to £1,800. These are, in number, ed to one-third, but the salaries in the gross increased to 5. There will now be 119 schools to direct, as against merly. In the 47 provided schools there were, in 1902, 5 children. The head teachers numbered 75, the other rs 365, making a total staff of 440, or one teacher to every hildren. In the 72 non-provided schools there were only children in average attendance. The head teachers num- 87, the total staff being 317, or one teacher to every 23·8 en. The proportion of staff to children, in number, was lmost exactly the same. Attention would be closely paid attendance. Denbighshire has an average attendance of being one of the lowest three counties in Wales.

A enquiry has taken place in Carnarvonshire in connection the Draft Final Orders under section 11 (4) of the Educa- Act of 1902. This provides that four foundation managers ppointed for every non-provided school, who must be *fide* members of the Church of England. At Bodfean ol, in Carnarvonshire, the first case taken before the missioner, it appears last year that the managers were the r and two laymen, both nonconformists. There has for a time past apparently been a voluntary rate levied for the ch school, on certain understandings, and a protest was e against the exclusion of the old managers on the sole nd of being nonconformists.

THE Court of the University of Wales has passed resolutions mitting the following points to the Senate: (1) The desir- ity of requiring candidates for a degree in science to show, he time of taking their final examination, that they are able ead with ease either German or French; (2) that geography ncluded as an optional subject in the matriculation examina- ; (3) the desirability of an intermediate course of study to ranged in general geography including physical geography, a view to provide a training for teachers in geography. as further decided to ask the Senate to consider the desir- ity of making a conversational knowledge of French and nan compulsory for all those who take those languages in degree courses.

A SCHEME for religious instruction has been prepared and d by the Merionethshire Education Committee, and will come into force after the midsummer holidays. It contains the following points: School to begin with the Lord's Prayer and a hymn; to be closed with the Lord's Prayer and singing of the Doxology. The main contents of the Bible to be taught; the lessons to be graded to suit the capacity of children of different ages and to secure a general uniformity in the character and amount of instruction to be taken. Devotional exercises and Bible teaching not to exceed half an hour. These lessons may be taken in Welsh or English, or partly in each. "It is intended that a spirit of earnestness and reverence be inculcated throughout, but particularly in the devotional exercise." No attempts are to be made to bias the children in favour of the tenets of any particular denomination. "In general, prominence should be given to the salient truths that bear on life and conduct, passing lightly over subjects of only critical or controversial interest." Pictures for younger children and maps for older children, and other aids to teaching, are to be freely used. A schedule of proposed lessons is drawn up, including memory exercises, Old Testament and New Testament lessons for each standard. Teachers may, however, offer for consideration alternative schemes of similar scope.

RECENT SCHOOL BOOKS AND APPARATUS.

Classics.

The Homeric Hymns. Edited, with Preface, Apparatus Criticus, Notes, and Appendices, by T. W. Allen and E. E. Sikes. lxxviii. + 330 pp. (Macmillan.) 10*s.* 6*d.*—This book is much wanted. There exists no satisfactory edition of the "Hymns:" the text is in a corrupt state, and the interpretation has hardly been worked out seriously. Mr. Allen knows more about MSS. than most people, and Mr. Sikes is a student of folk-lore. There is a full account of the MSS., with a history of scholarship in relation to the hymns; a separate introduction to each hymn; and ample notes. We miss only a bibliography, which in so large a work ought surely to find a place. It is not satisfactory to assume that every reader will have Gemoll, although of course scholars will. We also protest once more against Macmillan's "new Greeks," which try the eyes abominably, and are not even ornamental. Our editors are excellent as commentators, but perhaps a little lacking in humour; the rare literary quality of the "Hymn to Hermes" is hardly treated with justice. But these are trifles, when we consider the scores of dark places which have so often puzzled our wits and others', and now have some light at least thrown upon them. The book does credit to its publishers.

The Tutorial History of Greece from the Earliest Times to the Death of Demosthenes. By W. J. Woodhouse. viii. + 505 pp. (Clive.) 3*s.* 6*d.* *Tutorial History of Rome: the Early Principate,* 44 B.C.-138 A.D. By A. H. Allcroft and J. H. Haydon. Third Edition, enlarged. l. + 310 pp. (Clive.) 3*s.* 6*d.*—The Roman history, now in its third edition, has evidently supplied a want. It is written with independence of judgment, and without pretentiousness of any sort. The authors are careful to be fair, as in their treatment of Tiberius. They repeat, however, the old accusation that "Roman society was rotten, root and branch;" a statement which was probably not true of Rome even, certainly not of the provinces. If they had used the same independence in estimating Nero as for Tiberius, they might have found something to say for his capacity as an administrator. Mr. Woodhouse, a practical explorer as well as

student, is exceptionally well qualified to write a history of Greece, and he has done it well. He wisely decides to confine himself to the known or proven, as for immature students; but he states as a fact Mr. A. J. Evans's fantastic theory of the Cretan "Labyrinth." Otherwise we have no serious criticism to offer. It contains a great quantity of information, and is clearly written.

Tacitus Agricola. Edited by G. Norwood and A. F. Watt. 81 pp. (Clive.) 2*s.* 6*d.*—This is a very fair edition of one of the most interesting parts of Tacitus. The introduction is good, the notes addressed to persons who are not very well instructed.

Myths from Pindar. Chosen and Edited by H. R. King. Illustrated. xii. + 96 pp. (Bell.) 2*s.* 6*d.* net.—This is an admirable little book. The selections from Pindar are made for æsthetic reasons, "to stimulate the imagination and strengthen the love of literature rather than to train the mind in vital accuracy." Abundant help is given, and if this is justifiable for any author, it is for Pindar. We can cordially recommend it for intelligent sixth-form boys.

Lucian, Vera Historia. With Introduction and Notes, by R. F. Yates. viii. + 111 + xlvi. pp. Vocabulary. (Bell's Illustrated Classics.) 1s. 6d.—In Mr. Yates's book the pictures have to be taken on trust. "From a vase painting" may mean anything between 1500 B.C. and 150 A.D.; in fact, the authorities given for these pictures are worse than nothing, for they only pretend to authorise. The book should interest beginners, and it has been sympathetically edited. We wish the print were better and margins wider; this type of book is bad for boys' eyes.

Quintus Curtius Rufus. IX. 1-5. (Alexander in the Punjab.) With Introduction, Notes, and Maps. By H. B. Cotterill. xvi. + 84 pp., and vocabulary. (Blackie's Illustrated Latin Series.) 1*s.*—This is a well-known subject, edited with notes commendably brief. The illustrations are selected with more appropriateness than usual, and are intelligently described. But we grow more and more convinced that illustrations *in the text* distract the attention painfully.

A Latin Anthology for Beginners. With Notes and Vocabulary. By G. B. Gardiner and A. Gardiner. viii. + 205 pp. (Arnold.) 2*s.*—The theory of Latin verse set forth by these editors apparently confuses accent (*i.e.*, rise and fall of voice) with thesis and with quantity. The selections are all in verse, and the earlier lessons consist of disjointed lines or small groups of lines. There follow short stories and complete extracts in hexameters, elegiacs, and iambics.

Livy, Book VI. With Introduction and Notes by A. R. Cluer and P. E. Matheson. (Clarendon Press.)—This is a separate edition of Book VI. with the introduction to a larger edition of Books V.-VII. inclusive. We would specially praise the "Excursus on Livy's Language and Style," a most useful addition. The notes are satisfactory.

Cornelii Taciti Annalium, XIII.-XVI. With Introduction and Notes abridged from the larger work of Henry Furneaux. By H. Pitman. xliv. + text unpaged + 146 pp. (Clarendon Press.) 4*s.* 6*d.*—Mr. Furneaux's "Tacitus" is a standard edition, and this abridgment will be most welcome. It contains those parts of the Annals which relate to the reign of Nero; the notes are shortened or supplemented to suit younger students, and there is an excellent essay on the "System and Style of Tacitus," besides the sections on history. There is a good map, but no index.

Longmans' Latin Course. Part II. viii. + 117-364 pp.—This part includes the pronouns, numeral adjectives, irregular verbs, accusative and infinitive, ablative absolute, dependent question, the use of the cases, the calendar, dependent clauses, and simple oratio obliqua. The fault of the exercises is that they appear to be nearly all meant to be written. But plenty of *viva voce* drill should precede all written exercises, and hardly a hint is given for that. The book does not distinguish itself from others of the same sort.

Allen and Greenough's New Latin Grammar for Schools and Colleges. Edited by J. B. Greenough, G. L. Kitteridge, A. A. Howard, and Benj. L. Dooge. x. + 477 pp. (Ginn.) 5*s.*—Allen and Greenough's Grammar is well enough known, in the United States at least, to need no introduction from us. The new revision shows the usual virtues of American scholars, who seem to have a peculiar taste for grammar as distinct from fine letters, for which we are not sufficiently grateful. We do not think that this is superior to Buck and Lane's Grammar, which we lately reviewed in these pages, but it is a useful book and well arranged. In the region of comparative philology, especially morphology, this book is behind the times. Thus no one would now distinguish SCAB, as root from "scob," as base, or speak confidently of a prehistoric period in which our ancestors spoke in roots "as is now done in Chinese." The Chinese is in its latest stage, and there is nothing to prove that our earliest stage was not like that of the North American Indians, where the unit of speech is a sentence.

History.

The Tudor Dynasty. By A. Hassall. xx. + 235 pp. (Rivingtons.) 2*s.*—This seems to be the first volume published of a new series of nine which is to cover English history to 1832. The books are intended for the middle and upper forms of schools. This volume is provided with six maps and an abundance of genealogical tables, as well as a synopsis of events. The matter is correct for the most part, though it would be difficult to find more examples either of curious connotations of terms or of errors in definition than in the paragraph on p. 214 on "Religious Parties in England." But we sincerely pity the pupils into whose hands this volume should be put for the purpose of preparation for a "local" or other examination. Mr. Hassall has surely never taught in a school, or he would not expect children to understand much of what he here presents. If space permitted, we could quote single sentences to illustrate our point. But the whole style of the book is at fault. The author is full of the literature bearing on a highly controversial period, and he has forgotten that pupils, and teachers too for the most part, will not understand his elaborate modifications of traditional views. What would they make, *e.g.*, of the statement (p. 120) that Cranmer was "not responsible for the Black Rubric"? What is wanted for schools is fulness of knowledge, coupled with the power of setting forth the results thereof in a plain story. Mr. Hassall has the former on most points, but he certainly has not the latter.

The War in the Crimea. By General Sir Edward Hamley. 120 pp. (Seeley.) 6*d.*—This is a cheap edition of a readable story of the war with Russia which has won favourable opinions from various critics. It is limited to the subject in the title; it contains nothing of the Baltic phase or the siege of Kars, nor does it mention the part played by Sardinia. But it is a good account of the general causes of the war, and of the military operations before Sebastopol.

Stories from the Life of King Alfred. By C. A. Milford. 96 pp. (Arnold.) 4*d.*—Clearly printed, fairly illustrated with

id poems, this is a "bright story reader" on the usual explanation of words, and a useful page at the end horities.

r History of England. By C. and M. Oman. vi. + 263 old.) 2*s.*—This is a good small book, as may be exm the name of its authors. It tells the main story wardly, half the book reaching to the "Revolution," mpleting the narrative to the present day. There are , four genealogical tables and an index.

of the Olden Time, by Alice Gardner (Arnold), 1*s.* 6*d.*, ts "fifth revised impression," and needs no commenn us. It is the simple talk of a scholar to a little girl ent Egypt and certain heroes of Greek and Roman ld in a most delightful way.

of Dr. Joseph Priestley. Written by himself (to the , with a continuation to the time of his decease by seph Priestley. iv. + 132 pp. (Allenson.) 3*s.* net. print of Priestley's memoirs appears appropriately in ary year of his death. It may be commended to our an autobiographical account of a great and good man. religious opinions will not commend themselves to ers of the book, but his honesty of purpose and the arm of his life are evident on every page of his

Science and Technology.

Nature-Study Readers. Edited by J. C. Medd. viii. + 176 pp. 1*s.* Book II. iv. + 204 pp. 1*s.* iv. + 215 pp. 1*s.* 3*d.* (Routledge).—These books sult of the coöperation of a number of teachers promigaged in the promotion of nature study, several of l-known authorities upon the subjects of the papers contributed. As Mr. Medd points out in his interest-e, the method involves an apparent lack of uniformity e, as well as some inequality of treatment. The e, however, consistent in emphasising the fact that ties for nature study abound on every side, and in in-o teachers courses which they may pursue with a of inconvenience and expense. Most of the papers ably written, and some reach a very high level of simple exposition. It seems all the more regrettable, there-id in some papers references to fern-seed and the leg-insects, and to see spiders classed as insects, and described as burning mountains. Considering the f compilation of the books, however, the number of urprisingly small, and there is very little overlapping. ns appear to be graded in order of difficulty, and are o the capacity of children from nine to fourteen years The books are well printed, and profusely illustrated nd reproductions of photographs, together with a few plates. Authors, editor and publishers alike are to be ated upon the success of what seems to be a unique it.

ank Buckland Reader. viii. + 248 pp. (Routledge.) It was a happy idea to bring out, as a schoo reader, me of selections from Buckland's "Curiosities of History." It is a singularly attractive record of the ns of a genial and gifted naturalist, which can hardly use the enthusiasm of every healthy-minded boy. A lementary readings, by the Rev. J. G. Wood, and a f notes and explanations, are also included. The book strated, and may be cordially recommended.

ighting of Schoolrooms. By Stuart H. Rowe, Ph.D. pp. (Longmans.)—This little book has been written with the object of impressing upon those who build and upon those who teach the necessity of caring for the sight of school children. It was written in America by an American, a fact which English readers should bear in mind, as several dimensional regulations for schools are referred to which do not accord with those recognised in this country. For example, the statement made that steps must not be more than eight inches high hardly falls in with the present views of our Board of Education. The author first deals with the question of the site of the buildings as affected by their surroundings, and draws attention to a useful relation between the height and position of surrounding buildings and the height of the class-rooms. He then considers the aspect of the rooms, and here again our cooler English summers must modify Dr. Rowe's opinions. The importance of left-hand light is insisted upon to an extent which almost seems unnecessary in these days, while lighting from other directions is fully discussed. Some useful hints follow on reducing the width of piers between windows, and on the use of prismatic glass and blinds, these remarks being supplemented by several illustrations. The next section of the book discusses the possible improvement of the lighting of existing buildings, and the concluding pages deal with the teacher's duty with reference to the postures of the pupils and as to testing their sight. What is called a standard class-room is figured and several times referred to, but surely the most economical size of room must depend in each case upon the desks used, the position of the door and windows, if fixed by the plan. A little bibliography and an index help to make the book complete, but artificial lighting receives hardly more than a passing reference, which seems a pity, as much work is done in all boarding-schools without the help of daylight. Though those who have devoted themselves at all to modern school requirements will find little in the book that is novel, we can thoroughly recommend these pages to teachers and architects who have no intimate knowledge of school buildings.

Metal Working. By J. C. Pearson. xvi. + 110 pp. (Murray.) 2*s.*—In this little book simple metal-working processes and tools are described. The illustrations are for the most part good and clear, although some of the machines shown are of rather antiquated design. A course in metal-working becomes valuable to the student, provided he is taught to set out from, and work to, dimensioned drawings. As no such explanations are given, it may be inferred that the matter in the book is to be looked upon as supplementary to the explanations of a good teacher. In the section describing marking-out tools we find the statement that the steel foot-rule should be graduated to sixteenths of an inch throughout, and over parts of its length to thirty-seconds. It would be better to explain also the use of rules divided decimally. Clear and precise explanations are given of many of the workshop processes described, and consequently the book will prove useful to many students.

Builders' Quantities. By H. C. Grubb. viii. + 227 pp. (Methuen.) 4*s.* 6*d.*—This book deals with a subject which is of great importance to students in the higher stages of building construction, and one that is necessary to all practical men engaged in supervising the erection of buildings. The subject is difficult owing to the variety of calculations involved, and the author has wisely included the necessary mensuration rules, with applications of their use, instead of assuming, as is generally done, that the reader has this preliminary knowledge. Good illustrative examples are given, and the methods of taking-off, abstracting, and billing are clearly shown. The book can be confidently recommended to all who are interested in this

highly technical branch of building construction as a clear and concise introduction to a subject full of intricate details.

A Preliminary Course of Practical Physics. By C. E. Ashford. 48 pp. (Edward Arnold.) 1*s.* 6*d.*—This small volume represents a course of practical work, consisting of about ninety simple experiments, arranged for the use of those boys at Harrow School who have never entered a science lecture-room. The letterpress is so arranged that the student can record all observations in blank spaces between the printed directions for consecutive experiments. The author suggests that, initially, a student should only be required to carry out orders intelligently, and that no demands should be made upon his powers of description, which should be developed at a later stage; hence the spaces left for the student's use are only sufficient to note down the observations and results. In acknowledging assistance in the compilation of these experiments the author remarks that "diligent students of *specimen copies* will recognise a large number as traditional": after careful consideration we are led to suggest that in one or two cases, in which the author seems to have gleaned the idea, method, and even the working of experiments from previous books, he would, we think, have been well advised to give a fuller acknowledgment of the sources from which such experiments are derived.

A Text Book of Geology. By W. Jerome Harrison. vii. + 350 pp. (Blackie.) 3*s.* 6*d.*—It is only necessary to say that Mr. Harrison's book has reached a fifth edition and that the contents have been brought up to date.

The Local Examination Physiography. By W. J. Perry. 166 pp. (Relfe.) 2*s.*—So many excellent books on physiography were already available that it is doubtful whether another was required. The information in Dr. Perry's book is unrelieved by experiments and is often meagre. The illustrations are mostly very crude.

We have examined the following new pieces of apparatus submitted by Messrs. Brewster, Smith and Co.

Self-lighting Bunsen. 5*s.*—This is intended for use on the lecture table, and may save both time and matches. A narrow metal tube terminating in a pin-hole jet is fixed close to the tube of the Bunsen, and a small mass of compressed platinum-black is supported over the pin-hole. By means of a tap at the base of the burner, gas is supplied to the narrow tube and the small "pilot" flame is ignited by the impinging of the gas on the platinum-black. A further movement of the tap admits gas to the main burner which is automatically ignited from the pilot-flame, and in a third position of the tap the pilot-flame is completely cut off. The idea is very pretty, but the sample tested does not happen to work automatically. We can imagine that the collapse of a beaker, full of liquid, over the burner would be still more grievous than it now is when the simple pattern is used.

Adjustable Wire-rope Clip. 3*s.*—This clip is an excellent method of binding indiarubber tubing to water taps when using water at high pressure. The clip is extremely strong, and its diameter is adjusted by means of a screw-thread and nut.

Water Turbine. 8*s.*—This is a very efficient and portable type of turbine. The speed varies according to the water pressure, from 2,500 to 4,000 revolutions per minute. The price is reasonable.

Burette Clamps. 2*s.* and 3*s.* 6*d.*—Nearly all burette clamps are unsatisfactory in that they soon fail to hold the burette vertically, and have no adjustment for remedying such a defect. The new adjustable clamps, which will carry tubes of any diameter from $\frac{1}{8}$ inch to 1 inch, are very convenient, and a *distinct* advance on previous patterns. They are supplied either *for one or for two burettes.*

Botany Rambles. Part II. In the Summer. By Ella Thomson. 130 pp. (Horace Marshall.)—The winsomeness of Miss Thomson's style will immediately secure the interested attention of young students of botany. The language is simple and, as a rule, correct, though we doubt the wisdom of writing about plants as if they were possessed of human traits. Like the previous volume of the series, this little book will assist the development of a real regard for the beautiful adaptation of form to function in the vegetable kingdom.

Mathematics.

A Treatise on Hydro-mechanics. Part I., Hydrostatics. By W. H. Besant and A. S. Ramsey. viii. + 264 pp. (Bell.)—In this, the sixth edition of the well-known treatise, various additions have been made, chiefly in the chapters treating of the stability of equilibrium of floating bodies, the tension of flexible surfaces and capillarity. The whole work has also been carefully revised and numerous additional examples inserted, while several of the examples to be found in earlier editions have been deleted. In its new form the book will doubtless retain its well merited popularity as a university text book.

Plane Trigonometry. By James M. Taylor. viii. + 171 pp. (Ginn.) 3*s.* 6*d.*—This work is drawn up on sensible lines and has been written with due attention to the needs of the beginner. In a short chapter the ratios are defined for acute angles and are applied to the solution of various problems. In the second chapter general definitions are given and the discussion and general proofs begun. The usual material of text-books on trigonometry, so far as that does not involve complex numbers, is compactly treated in chapters ii. to vii.; articles 77-8 might with advantage be inserted in the second chapter. A satisfactory discussion of complex numbers is somewhat difficult of attainment in an elementary book; the exposition given in chapter viii. does not seem to us to be of a kind that will meet the difficulties that a logically-minded pupil will raise, but perhaps it is sufficient for a first approach. De Moivre's theorem is carefully discussed, and is applied chiefly to the solution of equations; the applications might well be very considerably extended. The last chapter contains a number of miscellaneous examples; a fuller treatment of elimination than is given on pages 138-141 would be a decided improvement.

Decimals and the Metric System. 32 pp. (Blackie.) 2*d.* (paper covers).—This little book, which treats of decimal notation and the metric system for Standards IV.-VII., is designed to meet Code requirements and may be used along with other books on arithmetic. The explanations and illustrative examples seem to be very suitable.

Practical Geometry for Beginners. By V. Le Neve Foster and F. W. Dobbs. ix. + 96 pp. (Macmillan.) 2*s.* 6*d.*—This handsome volume provides a rationally arranged series of exercises in practical geometry. Pupils who work through the course laid down and are guided in their work by a sensible teacher will have gained a very extensive knowledge of the properties of geometrical figures, and will have acquired habits of accuracy and neatness that will be of lasting service. After a preliminary course like this, the geometrical training might and should, be mainly on the lines of formal demonstration. It is stated in the preface that the subject matter is almost entirely restricted to Euclid's first book, but we think that many theorems of later books will have dawned upon the pupil before he completes this preliminary training. We do not suppose it is intended that any pupil should work through every exercise, but there is a danger in providing a very large number of exercises, and it would be well that teachers should be on their guard against overdoing the practical geometry.

Examples in Geometrical Drawing. By V. Le Neve Foster. viii. + 179 pp. (Eton: at the College Press.) 3s. 6d. net.—Ample material is provided in this collection of examples for a good course in geometrical drawing. The exercises are well graded and judiciously varied. The section on solid geometry rather meagre in comparison with the wealth of detail provided in the sections on plane geometry, but the examples usually proposed are good and typical. The book has 64 pages geometrical patterns which have been in use at Eton for a r; the collection is a good one. Military entrance examina- papers form the last section (pp. 163-169), and will be of e to teachers. Great pains seem to have been taken with text and diagrams, and the general arrangement of the ter is very satisfactory.

eometrical Theorems practically demonstrated by means of ected Models. By Thorold Gosset. (London: Philip.) net.—The box that contains these models reminds one bly of children's toys, but the contents are fitted to serve a higher end than that of providing amusement for gsters. The models, which are of wood, can be used to ish experimental evidence of several fundamental theorems reas, such as Euclid I., 36, 41, 43, 47; II. 14. We have d with special interest the illustrations of I. 47 and II. 14; r modes of arrangement than those shown in the coloured t that accompanies the models can be occasionally devised, gh at bottom they usually differ by mere reversals. Teachers experimental geometry might derive useful hints, and dren would certainly obtain amusement from a little practice the models. In kindergarten schools the box would bably be of great service.

Miscellaneous.

Education through Imagination. By Margaret McMillan. + 196 pp. (Sonnenschein). 3s. 6d. — The author tries show and does show that the school kills the child; that it regards scientific advice about the eye, the ear, the drawing nd, the singing voice, the delighted spirit, the active muscles. is impossible to do more than refer to the wisdom hidden in e author's epigrams. Her knowledge is at first hand, her nclusions are her own. The book pleads for all we do not , and all we do not get; it pleads for enthusiastic teachers ho will not live in grooves, for the cultivation of the imagina- on on every side, for sunlight, for fresh air, *for grass play- rounds*, for good and abundant food. Yet is it too much to ay that we knew it all before? We will not train and pay the eachers as they should be trained and paid; nor will the State, as yet, lay its heavy hand on parents and say, "These are my children; you shall not misuse them." The author might have added a chapter on remedies; perhaps she recognises that remedies are even not to be suggested, much less to be tried. We hope that at least one education committee will make a present of this book to its teachers. This would finish one edition; and in the second edition a hundred misprints might be corrected.

International Exhibition, Saint Louis, 1904. Departments A and O Education and Social Economy. Catalogue of British Exhibits. 138 + 23 pp. *An Outline of Educational Organization in the British Isles. Prepared for the British Education Section of the Louisiana Purchase Exposition.* 24 pp. (Issued by the Royal Commission.)—The Catalogue of British Exhibits, which is under revision, is arranged in eight groups dealing respectively with elementary, secondary, and higher education, special education in the fine arts, special education in agriculture, special education in commerce and industry, education of defectives and special forms of education—text-books, school furniture and school appliances. Though it is not always easy to understand the plan of selection adopted by the Commission, the collection of exhibits may be described as typical and on the whole representative of the various grades of education in the British Isles. The "Outline of Educational Organization" gives a brief, concentrated, historical survey of the chief events in the educational administration of British education during the last hundred years. The two pamphlets together serve to indicate concisely, yet satisfactorily, the character of the British educational exhibits at the St. Louis Exhibition.

Teachers in Council. Being a Record of the Natal Teachers' Convention, 1903. Edited by E. A. Belcher. 178 pp. (Durban: Juta.) In our September issue of last year a large part of Mr. P. A. Barnett's presidential address to the Natal Teachers' Convention was published. This address, with a selection of papers read at the Durban meeting of 1903, are printed *in extenso* in this volume. The contents of the book shows clearly that the teachers of Natal are keenly alive to the importance of an interchange of educational thought and anxious to acquaint themselves with modern improvements in educational practice.

Cassell's Union Jack Series, Readers' Book V. 254 pp. (Cassell.) 1*s.* 4*d.*—Like the four earlier books in this series, the present volume is attractively illustrated and nicely printed. The selections are varied in character and prose and poetry are judiciously interspersed. The reader is suitable for the higher classes of elementary, or the lower forms of secondary schools.

The School Calendar. 1904. *A Guide to Scholarships and Examinations,* 1904. 204 pp. (Whittaker.) 1*s.* net.—This is the seventeenth issue of what is now a well-known work of reference in schools. A copy should be in the library of every headmaster and every headmistress.

Industries of To-day. Edited by M. A. L. Lane. v. + 137 pp. (Ginn.) 1*s.* 6*d.*—A reading-book containing descriptions of seventeen industries—chiefly American—which will appeal more specially to boys, though the interests of girls have not been forgotten.

Memoranda on Infectious Diseases for the Use of School Teachers. By James W. Allen. 23 pp. (Bristol: John Wright.) 6*d.*, 4*s.* per dozen.—Contains just the information—simply and concisely expressed—which all schoolmasters and schoolmistresses should possess.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Some Notes on Chest Expansion.

THE following notes are founded on the recorded measurements of 541 different boys at one of our public schools. The records show the girth of chest of each boy (1) with the chest expanded to its fullest capacity, (2) when it is emptied as far as possible. The difference between the two measurements recorded is taken as the measure of chest expansion.

Four curves of distribution were first obtained showing the percentage of the cases examined who failed to reach each $\frac{1}{10}$th of an inch of expansion.

No. 1 included all boys whose minimum chest-girth was less than 26 inches; No 2, all boys from 26 inches to 29 inches minimum chest-girth; No. 3, all from 29 inches to 32 inches; No. 4, all above 32 inches.

The four curves are extremely regular, and are precisely

similar in form. Not only this, but for the greater part of their length the curves are practically identical. This being so, a fifth curve was plotted, showing the distribution of the whole of the 541 cases observed.

For more than half the length of this general curve none of the other four curves differ from it by more than 0·1 inch. In the upper part the variation becomes slightly greater, so that, at the ordinate which indicates the amount of expansion below which ninety-five per cent. of the cases fall, No. 1 is 0·3 inch below and No. 4 0·15 inch above the general curve.

These facts indicate that, in general, the amount of expansion of which a boy's chest is capable is independent of the actual size of his chest: exceptionally large expansions are, however, less likely to be produced by boys with very small chests.

To come to details, the lowest expansion noted was 1·6 inches, the highest 5·2 inches, the mean 3·5 inches. Five per cent. of the cases observed expand less than 2·4 inches. Including these, twenty-one per cent. of the whole show less than 3·0 inches expansion; fifty-eight per cent. expand from 3 to 4 inches; the remaining twenty-one per cent. expand more than 4 inches; 5 per cent. expand more than 4·5 inches.

A detailed examination was made of the records of twenty-five individuals whose chest expansion was less than 2·4 inches, and of twenty-three who exceeded 4·5 inches. The average type of development of the two sets was compared by means of my tables of grades. By these tables each boy's measurements in height, in weight, and in chest-girth, can be referred to one or other of twenty grades all equally probable. Of these, grade 1 is the highest, grade 20 the lowest, the boundary between grade 10 and grade 11 is the measure of the mean. The result of the examination is shown in the following table, in which the upper line refers to boys of exceptionally low power of expansion, the lower to those of exceptionally high power:

Average Age.		Average Grade of		
		Height.	Weight.	Chest-girth.
Y.	M.			
14	11	11·1	9·4	12·8
16	3	7·9	6·1	13·3

At the school examined the weight is measured in ordinary dress; my tables are constructed for boys in gymnastic attire, consequently the grade of weight in both classes appears to be higher than it should. If corrected for this error, the grade of weight in each class would correspond closely with the grade of height. The grade of chest-girth is taken from the minimum chest-measurement, the chests being measured over the shirt; the tables are calculated for the deflated but not fully contracted chest, measured on the bare skin. I cannot form any idea of the correction required in order to compare the grade of chest-girth in each class with the corresponding grade of height; but the two results may safely be compared with each other. Such a comparison shows:—

(1) That extreme mobility of chest is not to be looked for, as a rule, until somewhat late in a boy's school-life.

(2) That extreme mobility of chest is associated, as a rule, with development in height and weight considerably above the mean for boys of the same age.

(3) That this extreme mobility of chest appears to be associated with a relatively very poor development of chest, when the chest-girth is estimated by the measure of the chest when contracted. This unexpected result is fully explained by assuming extreme mobility of chest to be due as much to unusual power of contraction as to unusual power of expansion. This explanation will also account for several cases of apparently *erratic development of* the chest in individuals, which have come under my observation, and have previously been set down to errors of measurement. In these cases obvious improvement in the development of the chest have been accompanied by apparent decrease in chest-girth, the measurement being taken on the deflated chest. This can be readily explained as the result of increased power of deflation.

The figures in the first line of the table do not convey any obvious lesson. The height and weight are close to the mean, and, as stated above, we are not able to compare the chest-girth accurately with them.

In order to compare the relative development of the individual in height, weight, and chest-girth, it seems obvious from the above considerations that the chest-girth ought to be measured by taking the mean of the maximum and minimum measurements, and not by measuring the circumference of the deflated chest, as I have hitherto done.

Haileybury College. CECIL HAWKINS.

A New Optical Lamp.[1]

IN attempting to assist teachers and students of light, I have constructed an optical lamp which overcomes the usual difficulties in arrangement and screening in laboratory experiments, and provides means of deducing the laws of reflection and refraction *directly, from observations of the visible paths of*—what may be practically considered to be—*a ray of light*. The

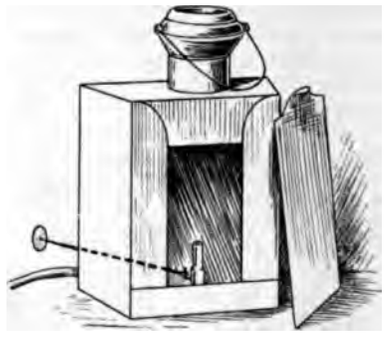

FIG. 1.—The Lamp Case and Slide (1.)

lamp has been used in this school with results that have established its claims and warranted its adoption.

It is made of metal throughout, and stands nine inches in height. The inlet and outlet are screened, and there is, in the front of the case, a large aperture which can be converted into any desirable size or shape by bringing a slide down the grooves on each side of the aperture. There are four slides, and each has an aperture, viz., (1) a pin-hole, (2) two pin-holes, (3) a circular opening, (4) a slit. A rotatory gas burner just behind the aperture can be turned from outside the lamp to present the flame in full width or edgewise to the aperture, and gas connection may be made in place of the Bunsen burner on the bench.

The source of light is thus screened on all sides except that on which the experiments are done, and the field of illumination can be limited to the usual screen, by a projecting screen which can be brought round the aperture. Two covers for the far end of the projecting screen complete the lamp: one of them has cross wires over an aperture in its centre, and the other has a full-length slit not more than half a millimetre wide. The adjustments of the lamp are quite simple.

The "shadow" experiments are done with slide (1), or (2), alone. Experiments with a spherical mirror or lens may be done with projecting screen alone, for an image of the gas flame, or with slide (3) and cover for an image of the cross-

[1] Rostron's Optical Lamp for Students. Patent applied for. Sole makers: Woolley and Co., Manchester. 12s. 6d.

wires. If slide (3) be omitted, both these images may be obtained in one experiment. The light is screened so well that no screen is required to protect the image when a mirror is used. With a large mirror, the best image may be generally obtained by blackening the mirror beyond a radius of one inch from its centre.

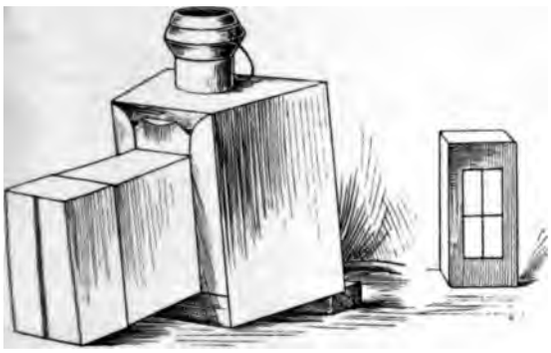

FIG. 2.—The lamp with slide, projecting screen, and cover-slit in position. Cross-wire cover at one side.

But the improvements in screening, compactness, and adjustment, afforded by this apparatus are of minor importance when compared with the advantages of the direct method with it, of showing reflection and refraction, over the indirect pin method.

The lamp is adjusted for these experiments by placing the projecting screen, slide, and cover-slit in position and turning the flame edgewise. If the lamp be then tilted from behind to bring the projecting screen to the bench, there is obtained on the bench a line of light so narrow and of such slight divergence laterally as to be considered for practical purposes *the path of a ray of light.* On a white surface this line can be seen in daylight, and all experiments with it may be done in the darkened laboratory with enough light allowed for recording observations.

To obtain the law of reflection it will be sufficient to place a mirror upright on the line. The paths of light are indicated so efficiently that the angles of incidence and reflection may be read from a protractor brought against the mirror.

Also, for the law of refraction, the details of experiment will be apparent when a glass cube or prism is placed on the line. The displacement of light by a cube can be seen on a vertical screen beyond the cube, for the paths of the refracted "ray" and of the incident "ray" are there shown side by side. Not only does the lamp enable one to see these principal paths, but it also shows that some of the light is reflected at each surface it meets.

It will be seen thus that each student in a class may turn the reflected ray or the refracted ray at will, and see its path indicated distinctly by the bright line of light on the bench. The adjustments are simple enough for any student, and one could couple the lamp to the gas-tap on the bench and go through every adjustment with ease in less than two minutes. The lamp is intended to be used by individual students or students working in pairs, so that eight or ten lamps are sufficient to supply a class. It is also convenient for demonstrations to small classes, and its price has been brought within easy limits of laboratory equipment. An additional advantage is that it is eminently adapted for use with a mirror galvanometer. For this purpose a cheap scale attachment is made to fit on the projecting screen, and then, with slide and cover in position and the flame edgewise, a good image of the vertical wire can be brought to the scale in the usual way.

HAROLD ROSTRON.

Bolton Municipal Secondary School.

A Summer Course of Nature Study.

A SHORT course in Nature Study, intended primarily for teachers in secondary schools, but open to other ladies, will be held at the Horticultural College, Swanley, Kent, from August 1st-13th. Weather permitting, the instruction will be given entirely in the open air. The college gardens, orchards, farm, &c., will be in working order and the out-of-doors superintendent, Miss Turnor, will give lessons in simple gardening. Mr. Finn will superintend the investigations of bird and insect life in the woods and fields, while on alternate days Mr. Tabor will lead excursions to study wild flowers and plants in their own environment. Mr. Hewod and Miss Dunham Massey will explain the life-history of bees, and the latter will also give some account of her system of nature study at the Clapham High School. The planning and management of school gardens, will be dealt with by Miss Agar. Sir John Cockburn and Mr. Medd have promised to give introductory and farewell lectures respectively to the students. Further particulars may be obtained from me.

EMMELINE SIEVEKING,
Hon. Sec.

17, Manchester Square, W.
June 7th, 1904.

The Teaching of Modern Languages.

SARCASM is good. But, in serious subjects, only when it contains something which is to be taken seriously. It did not occur to me to ask you to print the smile with which I relished Mr. Richards' little joke. But choosing the minor points of an adversary's case, and suggesting that those are the whole of it, is not good. What I was thinking of was not only *x* instead of *s*, but the hash that one gets as the result of a dictation exercise by those who are taught mainly *viva voce*, and the despairing tone in which a pupil who has not been drilled in verbs (not those "dear to examiners' hearts") tells his parent, at home work time, that "he can't find 'va' in his dictionary." If the new methods include the avoidance of such ignorance, I have no objection to them.

A RETIRED SCHOOLMASTER.

Rooper Memorial Fund.

IN May of last year a committee was formed with the object of raising funds to establish some permanent memorial in honour of the late Mr. T. G. Rooper (H.M. Inspector of Schools in Southampton, the Isle of Wight and the district), whose splendid work in the cause of education in this and other parts of the country was widely known and highly esteemed.

In response to the appeal made by the committee, a sum of £743 12s. 1d. was received. The total expenses, printing, postage, stationery, &c., amounted to £27 7s. 10d., leaving a balance of £716 4s. 3d. available for the purposes of the scheme. The committee decided to spend £10 of this sum in the erection of a marble tablet in the hall of the Hartley University College, with the progress of which Mr. Rooper was so closely associated. The tablet was unveiled by Mr. R. G. Tatton on March 19th.

At a general meeting of subscribers held on the same date the foundation of a scholarship to be called the "Thomas Godolphin Rooper Scholarship" was agreed to, and the following conditions were drawn up with respect to it:—

(i.) That the area from which candidates for the benefit of the fund shall be drawn shall be the late Mr. Rooper's inspectorial district . . . . but failing a candidate of sufficient merit from this area, persons from other parts of the county of Hampshire shall be eligible.

(ii.) That candidates to be eligible to receive the benefits of the fund shall have been educated for a period of at least two years at a public elementary school for older scholars, situated in

the above area, and shall have resided in the said area for a period of at least one year immediately preceding their candidature.

(iii.) That the fund shall be devoted to the founding of a scholarship tenable at the Hartley University College or at one of the universities of the United Kingdom.

(iv.) That the scholarship shall be awarded by the Senate of the Hartley University College upon the result of a competitive examination, and that it shall be held from year to year at the discretion of the Senate.

(v.) That the Court of Governors of the Hartley University College shall be asked to act as Trustees of the fund, subject to the conditions (*a*) that the money be used for no other purpose than that decided on by the subscribers, (*b*) that it appear as a separate item in the Schedule of Property of the Hartley University College, (*c*) that these facts be duly recorded in the minute book of the Court of Governors.

The Court of Governors at their last meeting consented to become Trustees of the fund on the conditions specified, and the Treasurer has handed over the balance of £706 4s. 3d. to the college authorities. This sum has been invested in Brighton Corporation three and a-half per cent. stock, and will produce an income of over £24 per annum.

The first award of the scholarship will be made in September next, after an examination conducted by the Hartley University College.

F. J. C. HEARNSHAW and J. F. HUDSON,
Hon. Secretaries of Committee.

Hartley University College, Southampton.

MUTUAL AID.

THE object of these columns is to afford teachers the opportunity of asking questions of and giving assistance to colleagues. The questions received to which replies are solicited will be printed first; following these will be the answers which have been sent in, and, to make such replies intelligible to all readers, they will be accompanied by the question. Readers are invited to send answers to any of the questions asked below by our correspondents.

The questions should deal only with educational matters, using the expression in a broad sense, and the publication or otherwise of any question must be left entirely to the discretion of the Editors.

Questions and answers should be addressed to the Editors of THE SCHOOL WORLD, St. Martin's Street, London, W.C., and should be accompanied by the full name and address of the sender, though not necessarily for publication. Each question or answer should be on one side only of a separate sheet of paper.

QUESTIONS.

A CONSTANT READER. I saw recently a notice of a new English grammar for children, written in the form of easy stories or lessons. I cannot trace it. Can any reader help me to find it? The only child's grammar written in the same style that I know is Mr. Marcet's, published by Messrs. Longmans. Are there any others?

G. H. T. Are there to be, at home or abroad, any summer vacation courses for teachers on the teaching of mathematics?

W. S. What books have been published in this country on the teaching of arithmetic to young children by means of concrete examples?

QUESTIONS WITH ANSWERS.

C. H. C. *Where can I find information as to sundials? I have one, of which the upright works on a hinge, which is graduated, and I do not understand why.*

GEORGE RAWDON. You will find all the information you require in "Sundials and Roses of Yesterday." By Alice Morse Earle. (The Macmillan Co.) 10s. 6d. net. An elementary account of the sundial, from which the reason of the hinged upright may be learnt, occurs in "A Manual of Elementary Science," by R. A. Gregory and A. T. Simmons. (Macmillan.) 3s. 6d. Many mathematical books and encyclopeidias contain detailed articles on dialling.

A. J. W. *Can anyone supply me with information dealing with the status of assistant-masters in secondary schools in the South African Colonies? Is the supply of qualified men short of or in excess of the demand? What is the standard of remuneration?*

EDMUND M. SPENSER. The following paragraph from the *University Correspondent* of May 16th, 1904, will give A. J. W. many of the facts for which he asks:—"On a hundred and fifty a year in England a teacher is as well off as he is on £250 in Cape Colony, and on £300 in the new South African colonies. The figures in the first case are supplied by no less an authority than Dr. Muir, the Cape Superintendent-General of Education; the second estimate is that of the *Transvaal and Orange River Educational News*. Teachers with stable home appointments and fair prospects should, therefore, consider thoroughly before venturing to South Africa. They will be the better advised to do this, inasmuch as we learn from the periodical just quoted that a number of teachers imported from the old country to the Transvaal only a year ago have recently had the option offered them of accepting a reduction of £60 a year in their salaries or returning to England."

W. M. *Wanted names of books containing* (1) *a collection of elementary problems in chemical arithmetic;* (2) *same for elementary physics where the subject is taught experimentally.*

H. TAVERNER. (i.) "Arithmetical Chemistry." By C. J. Woodward. Part I., 1s. Part II., 2s. (Simpkin Marshall.) "Chemical Arithmetic." With 1,200 problems. By S. Lupton. (Macmillan.) 4s. 6d. "A Series of Chemical Problems." With Key. By T. E. Thorpe and W. Tate. (Macmillan.) 2s. "Chemical Calculations." By R. L. Whiteley. (Longmans.) 2s. (ii.) "Arithmetical Physics." By C. J. Woodward. Several parts. (Simpkin Marshall.) "Exercises in Natural Philosophy." By Magnus Maclean. (Longmans.) 4s. 6d. "Examples in Physics." Containing over 1,000 problems, with answers and numerous solved examples. By D. E. Jones. (Macmillan.) 3s. 6d. "Problems and Questions in Physics." By C. P. Matthews and J. Shearer. (The Macmillan Co.) 7s. 6d. net.

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E NEW REGULATIONS FOR TRAINING COLLEGES.

some years past stability of aim and of nagement has well-nigh ceased to be aracteristic of the training colleges con- y the Board of Education, and simplicity iistration has not been favoured by the : of colleges of different kinds and of at varying levels of attainment. More- e machine has run less easily because and students have been directed by a gely interpreted through Whitehall "cir- of greater or less importance, issued at a intervals, and frequently initiating at short notice. All concerned in these are, therefore, to be congratulated on the the Board's latest pronouncement, the itions for the Training of Teachers," &c.[1] he compass of some sixty pages, there are forth the qualifications for admission to ges, the regulations respecting the courses iction and syllabuses of examination, the the inspection and financing of the colleges ie Government itself undertakes, together dozen or so appendices dealing with pro- s of instruction, the dietary of hostels, the n of class-rooms, &c., all being preceded 'refatory Memorandum" of the kind with he public was made acquainted the other he latest Code of Regulations for elemen- ools.

mpression left on the mind after a first is that the existing situation in the train- ges has been carefully scrutinised and, on ole, understood. The "Regulations" re- that our ideas on training are as yet so n finality that much wisely conducted enting is desirable. Whereas in the past *umus* was the response to any proposal to : King's Scholar, first, a general education, ly after that, technical training, to-day the ions not merely permit the colleges to give ofessional instruction either partially or in the student's final year, but they ite the establishment of institutions giving echnical training only. When these and like changes are in full operation, the *training* of teachers for service in elementary schools will be something more than a phrase.

To cope with the difficulties arising from the presence in the colleges of students whose attainments can only be measured by very different standards, the whole body of King's Scholars is divided by the Regulations into five classes, which may be briefly described as follows:—(*a*) The majority are *two-year students*, who during that period will receive, as well as professional training, a general education not of the university type, though individual students of this class may be permitted under conditions to read for some recognised stage preceding a degree. (*b*) *Third-year students*, men and women from the former class who receive an extension of their King's Scholarship on the ground of special merit, and for whom special educational facilities must be provided at their own or some other college, or abroad. (*c*) *Certificated students*, teachers already possessing the Teacher's Certificate of the Board, but who have not been trained in a college; these will take a course lasting one year designed to supplement either their general or professional equipment, as individual requirements direct. (*d*) *Three-year students*, members of a university, who will be allowed to read for a degree concurrently with their technical training, under conditions. (*e*) *One-year students*, graduates and others admitted to the college for a one-year's course, chiefly professional.

Representatives of all five classes are to be found in the colleges at present, as they have been for some years past; but, in the future, cause must be more clearly shown why a particular student is placed in one class rather than another, and, as a consequence, students themselves will realise more readily than has always hitherto been possible that their successful prosecution of this or that curriculum in the college must depend upon the nature and extent of their earlier studies before admission.

Most King's Scholars enter the colleges unprepared by training or knowledge to take up the work of reading for a degree at the stage usually thought appropriate to the young man or woman of eighteen or nineteen; their training, as a rule, has been more school-boyish than that of a good sixth-form boy, and, judged from the academic point of view, there are big gaps in their know-

[1] "Parliamentary paper, Cd 2134," price 4d.

ledge. Notwithstanding these obstacles and the shortness of their two years' college life, some of these unprepared students begin, at a time subsequent to their admission, a university course which those who originally framed it meant to end in a degree. As though their troubles were not sufficiently numerous, they must also find time for the minimum of attention to their more directly professional studies and exercises. It thus comes about that an intermediate stage, a mere halting-place in a degree-course, becomes the summit of their studies; their education on the intellectual side is truncated, incomplete. It has been said that we run the risk of becoming familiar with that brevet academic rank known to the westernised Hindoo as "Failed B.A."

The ambition to attain distinction in studies and the steadfastness which keeps a man pegging away under such heart-breaking conditions are attributes of character deserving of all respect. But the system is one of those whose only justification is their success; and in spite of the moral benefits it may confer, a public department may rightly decline to encourage a system which so frequently courts failure. "C'est un bel et grand adgencement sans doubte que le grec et le latin; mais on l'achette trop cher" is a dictum not confined to those ancient tongues; it is wide enough to condemn a struggle which, while almost hopeless from the outset of attaining its proper goal, yet keeps the student from some course which might be made complete, and more fitted to his needs.

The general education which the colleges are to give to the last four classes of King's Scholars does not require to be particularised here; that of students in class (*d*) is the business of their universities, that of the other three classes is supplementary. The regulations set forth curricula in literature, history, and science, which, while not of the conventional university sort, are yet boldly described as wide and liberal; their scope and treatment make them educative in the best sense, and to these the majority of the *two-year students* are directed. The prefatory memorandum has a series of admirable paragraphs showing that the "scientific spirit" is and always has been an indispensable factor in all advance in knowledge, in the study of literature, of history, and of foreign languages, no less than in the pursuit of the natural sciences. "Every training college, therefore, should attempt, even if it be only in a limited degree, to conduct its instruction, in as many branches of the curriculum as possible, in such a way that there shall be in the case of each student some range of knowledge within which there is no fact and no inference from facts which has not been subjected to the severest test at his command."

The branches of non-professional study which the majority of *two-year students* are to follow are the English language and literature, elementary mathematics, and elementary science. Geography and history are also prescribed, but, as glossed in the Appendix, this seems to mean history taught properly, because taught with due reference to topography; the scientific aspect of so very useful to just this type of unfortunately ignored. The list is c drawing, music, physical exercises, anc sity students an exceedingly heavy "la manual training. It is not intend courses shall be uniform in all college are additional and optional courses for s may profitably go beyond the minimum

The foregoing will constitute the sional side of the education given tc year students, that is, the majority of women who are to become certificated elementary schools. But the colleg criminate between these and other students who, by reason of knowled and character, are reasonably likely definite stage on the road to a degree leave the college, and to complete the sequently. Under conditions, the afford such students the necessary faci the wholesome absence of uniformity and there is a clear recognition that it to include in the public elementary sc men and women whose education has university type; the latter point is, better secured in the class of three-y

How far will this provision of univ for the two-year student be utilis conditions must be satisfied anteceder student must be sufficiently advanc from such study, (*β*) his instructio involve detriment to the studies of ot or to the work of the college as a w college must testify that he is reasona take a degree, and (*δ*) the medical certify that he is fit to undergo the involved. (*Article* 17.) Presumably will be satisfied by matriculation and of the student; (*β*) can only be met a resources allow. But the Regulat insist that the directly technical stu serious, and therefore exacting: mi will inevitably occur in the case of ind year and three-year students so lo young men and women are compell technical instruction and academic period which experience shows to be too long for the latter purpose alone. about the quart and the pint pot is a is homely; but the training colleges never to have heard it. The miscal anticipated by the Regulations, wh certain steps by way of amelioration.

It cannot have been the intention lations to drive all two-year studer London degree into the Faculty of S that is the scarcely avoidable conseq rule in article 17, which forbids King's that class to study Latin *or Greek*, unle passed an examination (recognised by in the language, before entering the lege. The University of London i candidates for the B.A. degree passi nation in both Latin and Greek at the

Examination; the position thus assigned to Greek has, as a matter of fact, driven not a few into the Faculty of Science, when on other grounds they might have taken the Arts' course. In the near future, the greatest number of King's Scholars, pursuing a university course in one place, will be under-graduates of this particular University; it is a thing to regret that, by including Greek in its proscription, the Board of Education has added one more to the inducements (numerous enough already) which make the elementary school teacher regard the B.Sc. degree as his natural certificate of attainments. Surely, schools destitute of teachers who are graduates in Arts are not good evidence of a belief that the "scientific spirit" is as much at home amongst sound letters as in biology.

Turning to the technical preparation of the future teachers, it is eminently satisfactory to find that the Regulations declare these professional studies to be both important in standing and considerable in bulk. The contrary opinion has brought about the existing unsatisfactory state of things wherein training colleges do not chiefly *train*. For the advantage of those who have previously attained "a satisfactory standard of general education," the Regulations permit the institution of courses, lasting one year, whose aims are chiefly technical; and in all colleges the instruction of this kind, as has been said, may be deferred till the student's last year, whether second or third. We shall never get true *training to teach* till this logical separation between studies academical and studies technical becomes the rule. The new local education authorities, by assisting existing institutions to carry out the one-year professional courses, or by initiating such courses themselves, would increase the efficiency of the training given to teachers, and solve some of the knotty problems of expenditure which that department of the public service raises.

Considerable latitude of choice is given by the Regulations in the details of professional study on the theoretical side; but four points are held to be essential. The student is to conceive education as a consequence of the intercourse between teacher and taught, that communion not being confined to the schoolroom: "le doctrine et enformation des enfants est chose espiritual," as the fifteenth-century lawyers said, giving the adjective a different meaning. Further, his studies in psychology are to be in a psychology which is actual, and not the perfunctory conning of text-books and lecture-notes. He is to ponder the ideals of great teachers, and lastly, he should have an adequate knowledge of school hygiene.

The Appendix sets forth five alternatlve syllabuses intended to give effect to the Board's intentions respecting theoretical instruction in teaching. All seem good in their way; but, as a general thing, all syllabuses imposed *ab extra* are bad. The competent teacher does not need them: the incompetent teacher, destitute of the measuring-rod which full knowledge gives, only mis-applies them. If any set of students were boxed up in one of these syllabuses, the effect would be harmful; but the case is not likely to occur. On the other hand, to teach everything set down in any one syllabus would mean superficial smattering, in one part or another. Years ago, Whitehall was responsible for a syllabus which made the theoretic consideration of teaching ridiculous.

The Prefatory Memorandum has some excellent remarks on the character of the *practical* instruction in teaching. "During the training college course it is essential that the student should have ample practice in conducting classes under skilled supervision, and that he should take part in the discussions on the merits and defects of the lessons given by himself or by fellow students," &c. "The importance of correlating the theoretical instruction in teaching, the practising school work, and the visits to model schools, should always be borne in mind."

The peculiar position occupied by the practising schools requires a word or two here, since the Regulations do not treat that exceptional position in a way which is satisfactory. Like all schools, these institutions exist primarily for the education of the children occupying their benches; the training colleges cannot but desire that this should remain their chief function, since that condition is essential if the schools are to be valuable as places of practice. But practising schools are also, *ex vi termini*, places of professional instruction, standing in a special relationship to the training colleges. The teachers who carry on the general business of the school should have ability not only to discharge that duty satisfactorily, but should also be able to co-operate in the training of the students; they should be picked men, enjoying privileges and receiving remuneration in return for their special services. The practising school needs more apparatus, other text-books, and, generally, a more ample material equipment than would be sufficient in the case of an ordinary school. Above all, there ought to be opportunity for a reasonable amount of properly supervised experiment, a freedom from the red-tape which is, perhaps, inseparable from schools forming parts of a great system. This does not mean handing children over to an inexperienced, irresponsible student; and those who are most familiar with what goes on in practising schools know well that the freedom here asked for need not prove detrimental to the children.

If the fact is not admitted by the Regulations, what is to be made of the following paragraph in the prefatory portion? Speaking of the "scientific spirit," the memorandum says: "Even on the professional side of the training college course, this principle must be remembered. The necessity for experiment and observation over ever-widening groups of phenomena is the most striking aspect of modern psychological investigation, and the teacher in training will gain much by watching some of the work that is now proceeding in the observation of children." Where is he to watch it but in his practising school? And what can he watch if there be no reasonable freedom of action permitted there to his instructors?

Unhappily, the excellent propositions of the preface do not receive much countenance from the "Appendix F Practising Schools," which bluntly declares that "The committee of the training college have no special claim upon the use of a particular elementary school merely because it has in the past been used as a practising school," and, it might be added, even though the Committee originally built the school for the practice of its students. The same appendix tells the committees (of course, in other words) that they may be called on to pay for admission to practise in schools built in the same circumstances; and, inferentially, that it is possible to employ a practising school without throwing "extra work deserving remuneration" upon the school staff. Lastly, "The Board will not sanction any arrangement which seems likely to interfere with the efficiency of a public elementary school (used as a practising school) as a place of elementary education, or to put any undue burden on the teachers of such a school." Is not this one of the things which might be safely left to be understood?

A reactionary local education authority, or a reactionary inspector (one hears of *him*, sometimes) may object to a course in, say, arithmetic or geography proposed for a practising school, that it differs from the course sanctioned for all schools in the district and therefore "interferes with the efficiency of a public elementary school (used as a practising school)," &c. In the present state of feeling in some parts of the country, objections, trivial but effective for their purpose, may be confidently expected; they are very much more likely to occur than a training college is likely to mis-handle a practising school.

In any case, with this appendix dominating the position, what becomes of "the importance of correlating the theoretical instruction in teaching" with "the practising school work," and of "the necessity for experiment and observation over ever-widening groups of phenomena," &c.? If a clause in the Education Act safe-guarding the legitimate connection between training college and practising school was not feasible, then Whitehall might have employed its administrative powers to better purpose than appears in Appendix F. Unless the peculiar position of the practising school is made clear to the public at large and secured against ignorance, either innocently unconscious or otherwise, many excellent directions in these Regulations will be stultified.

The School Manager's Handbook, 1904-1905. By Joseph King. viii. + 176 pp. (Edward Arnold.) 1*s.* 6*d.*—The subtitle of this little volume fairly describes its contents: "a handy guide for the management of public elementary schools, with the Education Acts of 1902 and 1903, the Education Code of 1904 (full text) and other appendices, including rules for planning and fitting up schools." The book will prove of real assistance to school managers, and Mr. King's remarks on the value of good teachers may be commended to them. "Good teachers must be sought out and treasured; treat them well; encourage young persons to enter the profession; do honour to those who give their lives to school work."

THE NEW REGULATIONS FOR SECONDARY SCHOOLS.

I.

By H. BOMPAS SMITH, M.A.
Headmaster of Queen Mary's Grammar School,

THE Regulations for Secondary Schools for the year 1904-5 recently issued by the Board of Education are not less significant than the Code for Elementary Schools which appeared a month earlier. Both sets of regulations are with a lengthy "Prefatory Memorandum" indicative of a new attitude on the part of the Central Educational Authority towards the practical problems of education and towards the spirit in which the solution of these problems should be attempted. In the old days we had elaborate regulations, watertight compartments, and a complicated system of checks; now the watchword of the Board are to be elasticity and freedom, and the co-ordination of the various types of education as parts of one coherent national system. The old Departments of Whitehall and Southampton have become absorbed into one complex Board of Education.

Ever since 1872, though the amount of instruction given in science and drawing was still accepted as the criterion of a school's right to a grant from the State, there had been a tendency to look upon a school's time-table as a connected whole, not as a collection of separate series of lessons. In 1902 a further step was taken by the admission to a modest share in the grants of a type of school in which, to quote Mr. Morant, "science is an important, but not a preponderating element in the instruction," *i.e.*, of "secondary schools, Division B."

In the new Regulations, of which the first part deals with "Courses of Instruction," a very important advance has been made. In the first place, it is definitely laid down that a course of three years' course of instruction must be provided in any school desiring to be recognised as such; and, in the second place, a long step has been taken towards the recognition of the principle that so long as a school provides this course of instruction it ought not to suffer financially if its special circumstances lead it to give more time to the linguistic than to the scientific side of the curriculum. The only stipulations now made with regard to the curriculum of non-scientific schools are that there shall be devoted to English, history, and geography four and a half hours per week, to foreign languages three and a half hours, or, if six hours if two are taken; to mathematics and science seven and a half hours, of which at least three must be given to practical and experimental science. By a noteworthy regulation, if only two languages other than English are taught, and Latin is not one of them, the Board will require to be satisfied that the omission of Latin is to the advantage of the school."

This greater latitude of curriculum will be of special importance to schools in which languages, whether modern or classical, figure pro-

pon the time-table. Three hours for science and ur and a half hours for mathematics is an exemely moderate allowance, which will be very mmonly exceeded. Moreover, in the case of irls' schools doing less than twenty-two hours per eek, a still further reduction is sanctioned. The iminution of the nine hours compulsorily given o mathematics and science to seven and a half ours will enable us to arrange for six three-uarter-hour periods for mathematics, and either two long, or one long and two short, periods for science, thus saving one and a half hours to be added to the time for literary subjects, in most schools preferably English, for which under the old regulations it was difficult to find adequate time.

Of more debatable wisdom is the provision in the Regulations which allows the omission in certain cases of all foreign languages on condition that it can be shown that the English course in the school "provides adequate linguistic and literary training, and that the staff is specially qualified to give such instruction." It is to be hoped that this condition will be stringently enforced, but it may be doubted whether a school should be regarded as providing a complete secondary education for pupils up to sixteen years of age which does not include at least one foreign language in its curriculum. These Regulations bear traces in several passages of the readiness of the Board to respond to pressure; in this instance its complaisance has been carried at least as far as is consistent with its duty of seeing that the standard of secondary education is fully maintained.

But, while thus allowing greater freedom of curriculum to schools willing and able to rest content with the lower scale of grant, the Board has not seen its way wholly to abandon the preferential treatment of science-teaching. A school which gives thirteen hours per week to mathematics, science, and drawing can earn double the ordinary grants. The conditions are, however, made more stringent than they have been hitherto.

This exception to the uniformity of grant is referred to almost apologetically in the Prefatory Memorandum, and, though it may be necessary as a temporary measure, "justified on historical and practical grounds and as necessary towards continuity of administration," it cannot be regarded as permanently satisfactory. The grant-earning capacity of a school should depend upon its usefulness, its efficiency, and its necessities, not upon the character of its time-table. It is quite true that laboratories are expensive, and most of us would welcome a special grant towards their equipment and maintenance. But such a grant should be subject only to the condition that proper use was made of the laboratories, in which case it would not serve as a strong and sometimes irresistible argument in favour of the adoption of a special type of curriculum.

An attempt is made to lessen the possible bad effects of such a preferential treatment of science by the provision that these "special courses" may be introduced into part of a school, or taken by boys as the third and fourth years of their course, without affecting the remainder of the school; they may form the curriculum of a science side. In large schools this may prove a valuable concession, but if there are only twenty or twenty-five boys in the third and fourth years of the course, it will hardly pay to split them up into two divisions, so that in the case of the necessitous smaller grammar-school the old inducement to take the scientific course will operate just the same.

The second chapter of the Regulations, on "Conditions of Recognition," contains a provision which, if strictly enforced, will tend to diminish the number of *pseudo*-secondary schools in which the bulk of the pupils leave at about fourteen years of age.[1] It is laid down that schools "will not continue to be recognised unless the Board is satisfied that an adequate proportion of the scholars are taking the third and fourth years of the course." It is to be hoped that this regulation will have the effect of raising the standard of attainment in some struggling secondary schools, which are really needed by their locality, but of compelling the reorganisation of other schools which are really only higher elementary in character, but injure their own usefulness by pretending to be secondary.

Passing to the chapter on "Grants," which now characteristically comes third instead of first, it will be noted that the scale of payment has been altered. For pupils in the first year of the course the payment will be less—40s. instead of about 54s.; in the second year more, 60s. instead of 54s.; in the third year 80s., about the same as before; in the fourth year 100s., instead of 80s. Thus schools will be encouraged to keep their scholars as long as possible.

The additional special grant may be equal in amount to the ordinary grant. The additional grant for drawing will be continued during the coming year.

The question of the adequacy of these grants cannot be here discussed, but it will be noticed that the Board now makes no attempt to differentiate schools according to their financial needs, nor to limit the grants to schools attended by pupils of the lower or middle classes. Apparently Eton might, if so disposed, make application for a grant.

On the whole, it seems clear that these Regulations will distinctly facilitate the working of schools in which the curriculum is largely linguistic. If not ideally perfect, they show a great advance in the direction of liberty and breadth of view. They show—*e.g.*, in the paragraphs dealing with the relations between the Board, the local authority, the governors of a school, and the headmaster or headmistress—that the Board has a real comprehension of the conditions under which school work is carried on, and a genuine desire to improve these conditions by considerate administration. It is this sympathetic attitude of our supreme Education Authority that warrants the hope of still further advances in the future.

[1] In 1901, of the pupils on the registers of Schools of Science less than 13 per cent. were in the third, and less than 4 per cent. in the fourth year of their course.—Balfour; "Educational Systems." 2nd Edition, p. 159.

II.

By C. M. STUART, M.A.
Headmaster of St. Dunstan's College, Catford, S.E.

THE chief interest of the new Regulations for Secondary Schools lies in the broad and generous spirit in which they are framed. These regulations will come into force on August 1st, and those who have to work under them will find that the authorities have travelled very far from the standard set up by the Science and Art Department—a standard which exacted the most rigid uniformity, combined with the most frequent examinations.

The Prefatory Memorandum is a somewhat unusual document to be prefixed to a set of Government regulations, and might almost be a confession of repentance for past misdeeds. Briefly speaking, it might be paraphrased thus:

"We believe no longer in rigid uniformity, but we recognise different functions in different schools, and we will especially consider their relation to their locality; we will encourage differentiation, but not specialisation, and we know now that the world cannot be reformed by teaching science. We recognise that a smattering of knowledge is useless."

Will the Board of Education fulfil these promises? "Don't never prophesy unless ye know," is sound advice, and we schoolmasters generally judge our boys by what they have done in the past rather than by what they say they are going to do in the future; but we will give the Board full credit this time for its liberal intentions.

> For forms of government let fools contest,
> Whate'er is best administered is best.

The inspectors are the men upon whom the duty of carrying out the regulations will devolve. It was not an uncommon complaint in the old days that their ideas were limited "to the four corners of the directory." If they are instructed to look at the spirit rather than the letter, to consider the education as a whole rather than in sections, to report on *method* rather than time-table, and to encourage originality rather than compliance, "grant-earning" may cease to be looked upon as a refuge for destitute schools, and need no longer be used as a term of reproach.

We pass on to consider in detail the scope of some specific regulations. By far the most striking regulation is No. 9. "Scholars in the first or second year may not sit for any external examination." This is progress with a vengeance, a public body discouraging public examinations!! "Is Saul also among the prophets?" It is earnestly to be hoped that this wise regulation may not be evaded, as it might be if a cram-loving schoolmaster chose to send in the whole school for the University Children's Test—we beg pardon, the Preliminary Local—that ridiculous examination which ought never to have been instituted. This is one of certain indications, the new method of choosing cadets for the Navy is another, which prove that public opinion is beginning to come round to healthier ideas on the examination question; possibly we may some day recognise that an examination "held solely for the award of scholarships or exhibitions" is not a help, but a hindrance, to true education.

The Board of Education has reduced the number of hours which must be devoted to science from four to three. The chief advantage of this will be that the crowding out of other subjects is avoided. For boys of 12 or 13 it does not matter a straw whether they spend three or nine hours in science, they will learn no more in the latter case than the former; in both cases they will learn scientific principles and scientific applications, *in so far as their brains are capable of receiving them*, and no more; what does matter is that the subject should be properly taught. In this connection it is a great misfortune that the regulations adhere to the obsolete formula, "The instruction in science must be both theoretical and practical." This implies a divorce between practical and theoretical work which the Board should employ every effort to suppress; for such a divorce is opposed to all the educational considerations for the sake of which science is taught. The Board here have lost a great opportunity; how much better would it have been if they had emphatically declared that "The theoretical instruction given must be based upon the practical work done by the pupils themselves, and no separation of practical from theoretical work will be allowed." If they had further taken the opportunity of emphasising practical methods of teaching mathematics and geometry, and oral work in modern languages, the advantages would have been great, and we hope they may do this through their inspectors; but, for goodness' sake, do not let us have inspectors coming down to us and saying, "You must assign an additional twenty minutes to theoretical work here, or ten minutes more practical work there."

The Board requires that certain hours shall be assigned to the teaching of English, and they are prepared to be satisfied that "the English course provides adequate linguistic and literary training" in certain cases. It will be very interesting to learn in the future whether the Board of Education will make a bigger success of this than the other public bodies which have tried their hands at showing how the teaching of English should be undertaken. The University of London (Matriculation Examination) until quite recently thought that English could be learnt by cramming up scraps of Anglo-Saxon and Semitic roots, varied with questions on the singular of "trousers." The Technical Education Board (Intermediate Scholarship Examination) considers still that English is best studied by getting up closely the archaisms and the slang of a single play of Shakespeare or a novel of Kingsley. We are informed that the Scottish examinations are very strong upon obscuring the meaning of good poetry by turning it into bad prose, a process which is called "paraphrasing." If the Board of Education can assist us to form a course which shall combine a general acquaintance with English literature with a facili-

ty in writing English, they will have done—well, what no other public body has succeeded in doing.

The system under which grants are awarded is still unsatisfactory. The Board of Education has not yet learnt one of the most elementary facts in school-keeping, viz., that pupils enter and leave the school according to the term and not according the year; consequently, pupils who enter and ave at Christmas and Easter obtain no grants all. Here are the actual numbers taken from t year in a school of our acquaintance:—

Total number in school	440
Left at Christmas	39
New boys	30
Left in April	29
New boys	32
Total	130

Here, although the members in the school ave only varied to the extent of six boys, 130 oys, or nearly one-third of the school, receive no grants. It is as if the Board of Education said to the school, "We recognise that it costs something to provide good tuition for 310 of your boys, but you cannot be put to any expense in teaching either sixty-five who leave or sixty-five others who take their places."

Again, on this system a boy who enters in September, 1904, and leaves in July, 1905, earns a grant, but a boy who enters in January, 1905, and leaves in June, 1906, although present for four terms and a half, earns no grant.

The grant ought to be awarded on the actual numbers in attendance *per term*, and there is no reason why it should cease on any one boy after four years; a boy who remains a fifth or sixth year in most cases costs not only more to educate but is probably profiting more by the education received, and the schools should be encouraged to keep him rather than to get rid of him. It would not be difficult for the Board of Education to make sure that his work was sufficiently advanced.

We have referred to the differentiation of studies compared with specialisation, and it is earnestly to be hoped that this differentiation of studies may be recognised and carried out on broad and liberal lines. It is exceedingly common to hear schoolmasters, on discussing the introduction into the school of any subjects of study other than their own, declaim against the evils of specialisation, and uphold "a good general education." We ourselves have heard very distinguished classical headmasters declare that specialisation in schools has increased, is increasing, and ought to be diminished;" and what was the "good general ducation" in the schools which these headasters conducted? it consisted of 11 hours Latin nd 11 hours Greek in a time-table of 25 hours a eek, and this was not for those classically inined, but for all; it is their idea of a good general lucation, and was really specialisation of the orst kind.

The Prospectus of one of the "great public chools" contains this announcement. Two hours a week are given to alternative subjects, including Singing, Drawing, Rifle Corps Drill, Carpentry, English Literature, Geography, Modern Languages, &c., among which choice is allowed.

Wonderful: isn't it? Liberal mindedness can go no further.

Differentiation of studies, however, appears to be encouraged by the new regulations, which speak favourably of the gradual development of what are known as "sides." We ourselves would welcome the disappearance of the difference between A and B schools, if it is recognised that all kinds of intellectual work are equally important if any honest attempt is made to provide for every boy a course which has some relation both to his mental capacity and his future career. We should, for example, be quite satisfied if on one side of the school the boy of linguistic ability learnt three foreign languages, and only did a one-year's course on chemistry, if on the other side of the school the scientific boy learnt one foreign language and various forms of applied mathematics and science. Both of these systems of training may be equally valuable, both should receive equal recognition, but both must be honest; the scientific side must be neither a refuge for the destitute nor by grant-earning a special source of income.

In times past we have had schoolmasters pressing boys not only into the linguistic, but into the classical studies, and the Government offering money to them if they will only do something else. The schoolmasters must become more liberal-minded in principle, the Government more liberal-minded in detail. The chance appears to be offered in these new regulations, and, if carried out in this spirit by the inspectors, more good will be done than in issuing Prefatory Memoranda by the dozen and new regulations by the score.

GLASS-WORKING FOR SCHOOL LABORATORIES.

By Rev. A. H. Fish, B.A., B.Sc.

II.

(*Concluded from p.* 254.)

BEFORE proceeding to more difficult processes it may be well to add a few examples of those previously described.

Drying Tubes.

The ordinary straight drying-tube for calcium chloride or cotton-wool, when not required very long, is easily extemporised from a test-tube 6 in. by $\frac{5}{8}$ in. by blowing out the bottom, breaking away the thin glass and forming a slight lip. This may be done by using an iron tool, a piece of electric-light carbon, or even the tang of a file. Very little pressure is needed, and very little of the glass heated. The tool held in the left hand is inserted at an angle with the glass, and held firmly while the glass is rotated. A charcoal cone is often used, but it is better not to multiply

tools, and it is as often as not out of the way when wanted. With such thin glass I rarely use a tool, but simply rotate the extreme margin of the lip left, after cutting away most of the thin glass, in the edge of the flame. Such a tube will as a rule require two corks; one may be saved by letting the closed end of the test-tube thicken in the flame, fusing on a piece of glass, drawing out a tail, then reheating and drawing slowly down to the thickness required. Useful funnels may be made by drawing out half of a moderate-sized test-tube, and pipettes by drawing down at both ends.

Of course thicker cylinder-tubing may be used in all these cases, but with a little practice test-tubes give fair results. They are always accessible, and are of course extremely light.

A useful tube for drying gases and other purposes is made by taking six to eight inches of cylinder-tubing, say $\frac{3}{4}$ inch in diameter, closing and rounding one end, and then putting in a side-tube of say $\frac{1}{4}$ inch diameter, about 1 in. from the closed end. This is bent up parallel with the other, and turned out at right angles (Fig. 1, A). A somewhat shorter tube answers well for collecting small quantities of liquids or condensed gases; in this case the side-tube is put in nearer the open end. Fig. 1, B, shows a phosphorus pentoxide drying-tube.

Thistle Funnels.

These can be bought so cheaply, and are generally so plentiful in the laboratory, that one does not often need to make them. The exercise is, however, a useful one, and gives excellent practice at the present stage. Here is one method:—Take a piece of $\frac{3}{16}$ inch or $\frac{1}{4}$ inch connection-tubing—say 9 in. to 12 in. long. Draw out a piece of cylinder, say $\frac{3}{4}$ inch wide, to a long tail, and two or three inches further up draw slowly down to the diameter of the other tube. Cut this off and join (A, Fig. 2). Now—rotating exactly as shown in the photograph given in a previous article[1]—heat the region above and near the join. Blow slightly and work the join into the expanded portion (Fig. 2, B and C). Draw off the tail, and round the end (D). Rotate this end rapidly in a hot flame, and blow it out, break away the thin glass, and put a slight lip on. A nicer way is to get the end rather thin; then, by rotating very fast and directing a hot flame on to the centre, it is possible to make the end open and spin out into a lip by its own centrifugal tendency (Fig. 2, E). If it refuses, stop the open end for a moment. A considerable variety of shapes may be obtained in this way. The required speed is more easily got if the other end be drawn down to a taper and very nearly closed. The tube is then supported near the middle with the left hand, and rapidly "twirled" between the finger and thumb of the right. If the rotation is not all in the same direction, but backwards and forwards, you will have a "lip" left.

Middle Bulbs.

To make a middle bulb is at once one of the most difficult and the most coveted of the glass-blower's accomplishments. This looks so simple and so easy that the beginner always tries to do it at an early stage. If he fails, and he is almost certain to fail, he becomes more or less disgusted with the whole art, and ceases to try. Now, in the first place, this particular process is in reality very difficult—far more difficult than anything yet described. And secondly, apart from the skill it carries with it, it is not nearly so useful in the ordinary laboratory as the joining of tubes, making of T-pieces, etc.

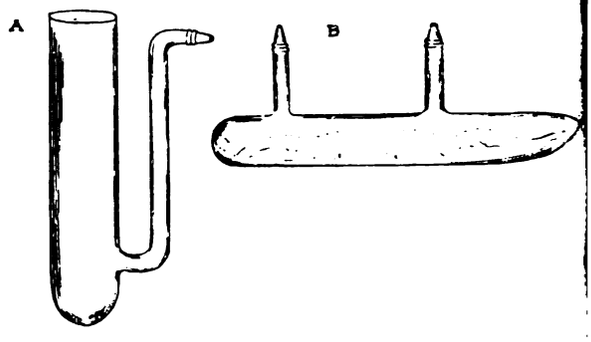

Fig. 1.

However, as the learner is sure to want to attain the art, and perhaps cannot see the thing done, I will do my best to direct him. He will learn little from the books—they invariably dismiss

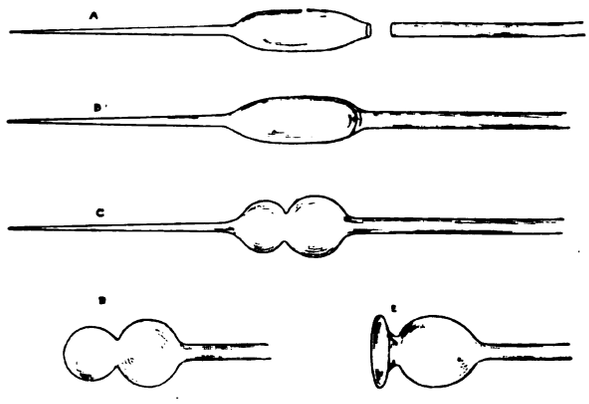

Fig. 2.

the difficulty in a few words. A well-known professional glass-blower said to me, "I cannot tell you how it is done, it is impossible; I can only show you how I do it." Unfortunately, even watching a professional is not very fruitful. He does it too easily. His method escapes the eye. And yet here, if anywhere, success can only be attained by setting about the work in a methodical and systematic way. The idea is contained in the words "axial rotation" employed in the previous article. Let the would-be learner practice this. And let him, if he has no previous experience of a lathe, try to get a few lessons in the turner's art. Let him understand the meaning of "between

[1] *The School World*, July, 1904, p. 251.

itres." Next let him "take it quietly." The rner generally pedals too hard, heats his glass hot, and tries by frantic rotation of his piece of is to keep the hot part from sagging or bulging. w for the bulbs he is likely to blow there is no l for all this. A soft but steady flame, a erate but uniform heat, a slow but axial ion, and a gentle and tentative "puffing," not ing, these are the elements of the art.

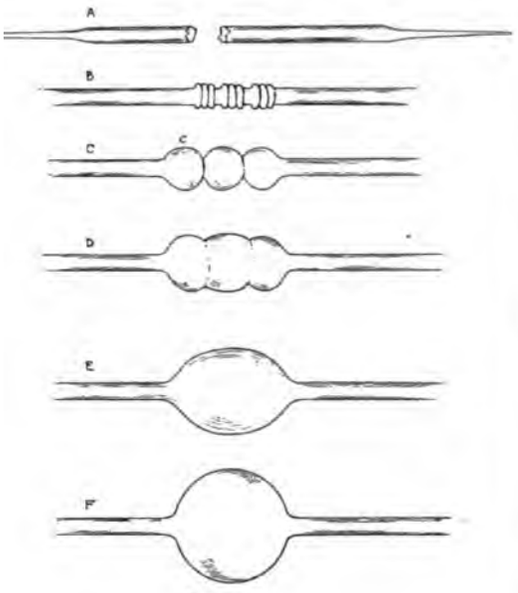

FIG. 3.

rhaps the easiest and most useful case is that nich a spherical bulb from one to two inches ameter is required in the course of a piece of g—say $\frac{1}{4}$ inch in diameter. I do not advise eginner to insert a piece of thicker tubing into ther. This is a common practice, and of

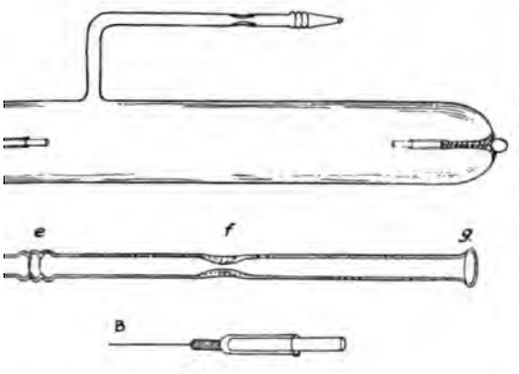

FIG. 4.

se for large bulbs it may be often necessary, for the beginner it introduces more difficulties it removes. Let him take a foot or more of ch tubing, and draw down the ends as axially can for two or three inches. The first is cut eaving an orifice for the mouth not less than $\frac{1}{16}$ inch. This is made smooth, the other end is closed. Let him now grasp the tube as shown in the photograph, p. 251, and see whether he can turn it fairly axially with the right finger and thumb only, the left remaining still, merely supporting the point; let him then with a rather small sharp flame commence heating the tube an inch or so below (*i.e.*, nearer the left hand) than the centre. As a small zone softens, a gentle pressure will compress and thicken the glass. A number of these thicker rings are added—to use a technical expression, the glass is "jumped" (Fig. 3, B). But more "jumping" is required than shown therein. Let him keep the heat well on the thickened part and gently blow now and again. This may now be blown into a small thick-walled bulb, another and another are added in the same way (Fig. 3, C). A large flame is turned on, and with slight pressure and occasional blowing the smaller bulbs are got into one round or oval mass (Fig. 3, D and E). This will probably not be uniform, nor will the end-pieces be axial—the tube will be a little "out of truth." This is *felt* rather than seen. We must now correct both faults, and it is on the success of this correction that the final result mainly depends.

The important fact is steady uniform turning in the flame. Do not let the glass get *too* soft. Occasionally take it out of the flame for a moment, but do not stop rotating. Try now to blow a small bulb still quite thick; if it has faults heat it till it shrinks a little, and blow again. Do not try for the final bulb till you have got the small one as good as you can. Assuming this done, turn on a little more gas and rotate carefully in the central axis of the flame. A little faster now, if you can, until the "feel" is right; bring it out, continue to turn for a moment, bring the open end to the mouth, the other point supported by finger and thumb of left hand with elbow on table (if necessary). Now rotating gently with the right *or* left forefinger and thumb (not both), "puff" once or twice gently, watching the effect—if bad, stop; if good, blow harder as the glass cools. No pressure is exerted with the fingers till just before the glass sets, when a little straightening may be done. The bulb will probably be neither so large nor so round as you would wish. If it is only a moderate success, it may be improved by reheating. Do this in a large soft flame; blow in to the bulb a little from time to time if it shows a tendency to wrinkle, and finally blow out again. This may generally be done several times. Go tentatively, do not get the glass too hot, and let it cool somewhat before blowing. One does not get in this way the beautiful spun spheres of the professional, but one may with care and practice get bulbs which will bear inspection, and do very well for all purposes for which we need them.

There are other methods of blowing centre-bulbs, but this is the simplest and most useful for the learner. He should steadily practise the process, keeping his best bulbs (in a drawer). As he improves, he will be able to use them for making traps, valves, potash bulbs, etc. He will

probably find that he soon has far more than he needs.

The simple form of potash bulbs (Liebig's) affords very good practice. They are of course made in one piece and bent up afterwards. The learner should perhaps make the three smaller bulbs in one piece, the two larger separately, join up, and bend. The joins will show slightly, unless arranged to come in the smaller bulbs, but will not affect the usefulness of the bulbs. Owing to the non-arrival of an "order," I had once to make six of these before morning school, and, by utilising the spare bulbs lying about, I easily managed my task to the satisfaction of everyone, though none of the articles would have been commercially quite presentable.

The teacher who has acquired a certain amount of skill in the preceding operations will find many opportunities for putting them into practice, not only in the chemical, but in the physical laboratory. Branched-tubes and T-pieces are extremely useful in experiments on atmospheric pressure, and Boyle's law, with the air-pump, etc. The Boyle's law tube, which gives the best results in my laboratory, is constructed entirely of glass, with taps fused in, and was entirely made by ourselves. Barometers and manometers, specific gravity bottles, weight thermometers, and even ordinary thermometers, apparatus for showing the expansion of water and other liquids, all these afford exercise for ingenuity and skill in the simpler parts of the art.

Passing to more advanced work, I strongly recommend the teacher to acquire some skill in the proper fusing of platinum into glass, and the making of electrodes and simple vacuum tubes. Recent investigations have given to the passage of current through electrolytes and the electric discharge through gases an amount of interest and importance which quite warrant some introduction of these phenomena into moderately advanced school-work. Most physical laboratories now possess a Geryk air-pump, and with the aid of this all the phenomena of low vacuum tubes can be shown, while the addition of a simple Sprengel pump will enable those of the kathode and X-rays to be seen. For either purpose the teacher must possess some skill in certain processes connected with glass-blowing, and this skill many teachers are probably anxious to acquire. I propose, in concluding this paper, to offer some assistance, which would have saved me much time and trouble years ago.

This will probably be done best by giving some description of the method of making a simple vacuum tube, which will introduce us to the art of fusing platinum through glass, an art useful at the present time in many physical experiments. I will describe the construction of a vacuum tube for use with the simpler Geryk pump, and a small induction coil (Fig. 4, C). A piece of cylinder-tubing, about 2 feet long, and an inch in diameter, is drawn from a "cane" and well cleaned. The drawn-out end is thickened somewhat at the "neck," and a cork and bit of tubing fitted to the other end. A side tube (Fig. 4, A) is then made, corrugated a little at *e*, thickened and partly drawn down at *f* and bordered at (C). The main tube is warmed up about 2 inches from the closed end, a hole blown out, the side tube A sealed on and bent at right angles as shown at C. This join, especially if the tube is at all thick, must be slightly annealed in the smoky flame.

The electrodes are then prepared. These are made from stout pieces of aluminium wire 1½ in. long, flattened on an anvil at one end, turned over, and hammered round the extremity of three inches of ordinary platinum wire. A short piece of thin glass tubing is slipped over and sealed to the platinum with some lead glass, or enamel, or better, the so-called "platinum glass," which may now be obtained in rods from all dealers. About ½ in. of the platinum wire is solidly and uniformly coated with this glass. The result is shown at B where the shaded part is platinum glass. Now cut off the taper end close to the neck, leaving a hole rather larger than the coated part of the wire. Remove the cork, slip the electrode on to the tube, and holding this horizontal or nearly so; rotate the end in the flame; as the orifice narrows slide the electrode down, so that the free part of the platinum will come through. Continue to rotate, pulling the wire very gently with a pair of light pliers or forceps, blowing a little from time to time into the open end, and maintaining the electrode horizontal by rotation, until it is well fused into the glass as shown in C (Fig. 4). Cut off part of the wire, if necessary, and turn it over with pliers into an eye, pushing the free end into the soft glass. This end must now be carefully annealed. Gradually withdraw it into the luminous gas-flame, and rotate it there till it becomes covered with soot. As an additional precaution, a small cone of asbestos paper may be placed on it, and the whole supported in a vertical position till quite cold. Slip on the other electrode, draw down the end of the tube, cool, cut off, and seal and anneal as before; any blowing is done by means of the side tube furnished with a foot or two of light rubber-tubing. A drying tube, which may be of the form shown in Fig. 1, A is attached to the pump, the newly-made tube joined to this by good pressure tubing. If the "eyes" be now connected with a small induction coil, after a few strokes of the pump, the beautiful phenomena of the discharge will begin to show themselves, and the exhaustion may be pushed till the "striae" begin to appear in the luminous column. With india-rubber connections the vacuum will not as a rule hold up more than a few minutes, after stopping the pump. If it is desired to seal off the tube, a small pointed blowpipe flame is applied at the constriction. This is allowed just to close, the small end drawn off, and by carefully working back a little at a time a solid knob of glass is made at the end. This latter process requires some practice. The great point is that the constriction shall be thick in the walls, and only just a point of flame applied. All this sounds, no doubt, somewhat difficult, but it is in reality easier than such accom-

plishments as the blowing of a decent bulb on the course of a piece of tubing. The great thing is to go to work systematically, have everything in readiness at the proper time, and look ahead from first to last. A Sprengel pump may be bought, and the exhaustion pushed to a high point, but no one should buy a Sprengel pump who cannot make one, for it is sure to be broken soon, and most parts of it will sooner or later need repair or replacement.

In conclusion, I should like to say that some of the methods recommended in these articles are not those of the professional glass-blower. I have tried to describe methods which the teacher can learn, which will give sufficient results for practical purposes, and will not require a higher degree of skill than he has time and opportunity to acquire.

THE SCHOOL CLASS-ROOM.

By ALAN E. MUNBY, M.A.

THE advances which are taking place in all forms of training are gradually bringing home the fact that efficiency does not alone depend upon the methods of work adopted, but that it is also indissolubly bound up with the physical conditions under which that work is carried out. These convictions have resulted in very definite requirements of the Board of Education with reference to school buildings. Apart from the mere compliance with these regulations for the purposes of earning grants, a matter which, at the present time, has no interest for the majority of our public schools, it should be remembered that these rules are the outcome of the work of specialists and statisticians, and set a standard of efficiency which should be adhered to in all new buildings and, at least, aimed at in the case of those existing. Five or six hours a day regularly spent in a room would seem to justify an hour or so of thought upon its use and arrangements, yet it is easy to find in our leading schools stuffy and ill-lighted rooms, innocent of ventilation, containing desks without arrangement and blackboards in invisible positions. It is thought, therefore, that, though the attributes of a modern class-room are well known to many, a short article dealing *seriatim* with the points of such a room may prove useful.

ASPECT AND WINDOWS.

As our lives are dependent upon that cheering and germ-destroying luminary, the sun, a class-room should always participate in sunshine. Let dull days upon which the sun has proved a nuisance and a joy respectively be counted over any reasonable period, and few will be found to contend that a south-east aspect is not the best for a room, and a north-west or north aspect the worst; but this, of course, is a matter connected with school planning in general.

The main windows should be entirely on one side of the room, and, since some quaint custom obliges us all to use but one hand for writing, the light should, of course, come from the left of the writer to avoid the shadow of his hand upon his work, which necessitates that the desks should all face in one direction, an arrangement naturally desirable also for other reasons. If any of the remaining walls of the rooms are outside walls, one or two quite subsidiary windows, high up and as far as possible from the main window, will prove very valuable for obtaining cross ventilation, and this provision, in the absence of any general scheme for ventilation, assumes considerable importance.

In a room of economical and desirable dimensions, depending entirely upon a left-hand light, it will be found that to provide a glass area equal to one-fifth of the floor area, as required by the Board, practically the whole of this side of the room above four feet from the floor must be window. In all cases the windows should go right up to the ceiling to secure good ventilation, but the height from the floor at which they start should depend on local circumstances. On the ground floor, and where outside distractions prevail, four feet to four feet six inches, as recommended, seems desirable; but, as an average boy when seated can see very little outside at close quarters when the glass line is three feet six inches from the floor, this height might often be adopted, as it brings much additional cheerfulness and light to the room. The writer recently observed some windows in newly-erected class-rooms at a public school, quite in the country, in which the glass started nearly five feet six inches above the floor; these rooms resembled wells.

As regards the type of window, ordinary sashes (lifting windows) with a deep bottom rail and bead and large panes are most suitable. Where such windows are of considerable height, a transom across the upper part with hopper lights above it will make the opening of the windows more easy, decrease the weight of the sashes, and help the external appearance. The mullions or piers between the windows should be narrow and bevelled internally to avoid the cutting off of the light, and in the case of high windows the cills should be similarly treated. Bevelled steel mullions may be used with advantage in cases where the available window area is restricted.

DIMENSIONS.

The plan of a class-room, as is so lucidly explained in Mr. Clay's book,[1] is essentially bound up with the position of doors, windows and fireplace (if any), and particularly with the style of desks to be used, if economy of arrangement is to be studied. The latest regulations of the Board of Education[2] require the use of single desks in secondary

[1] The writer wishes to acknowledge his indebtedness to that valuable and now standard work, "Modern School Buildings." 1902. By Mr. Felix Clay, Architect to the Board of Education.

[2] Board of Education, Form 1999, issued 1904.

schools. These desks are 2 feet to 2 feet 4 inches long, and occupy 2 feet 9 inches to 3 feet from back to front over seat and desk together; they should stand in rows one behind the other, just free from contact, and an 18-inch gangway is required between each row and at each side wall. Further, 12 inches is necessary between the last seat and the back wall, and 7 feet 6 inches running the full width of the room in front of the first desk for the master's platform. This works out at about 18 square feet of floor per boy, which area is, in fact, demanded. The window wall should be one of the long walls of the room, otherwise the room must often be wastefully high to be properly lighted. If the height from the floor to the window tops be half that from the nearest point on the window to the furthest point on the desks, the room will, in normal circumstances, be efficiently lighted, but the Board of Education demand 12 feet as the minimum height of the room. Figs. 1 and 2 show plans of two of a range of class-rooms complying with these requirements for twenty-five and thirty

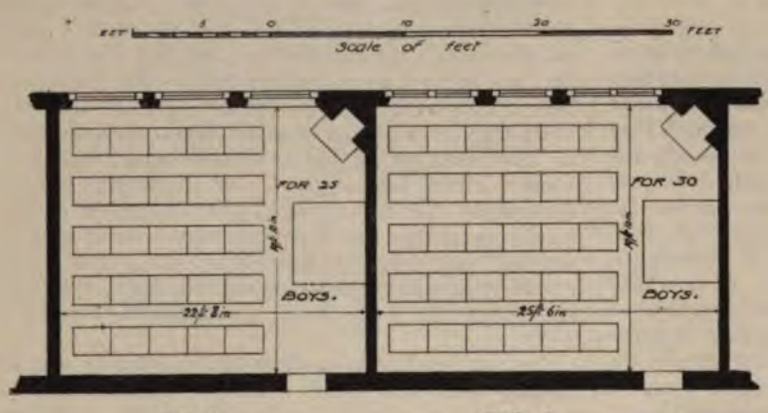

FIG. 1 FIG 2

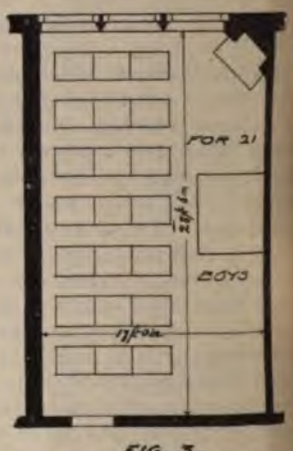

FIG. 3.
BAD ARRANGEMENT.

boys respectively, and of minimum size for desks 2 feet 2 inches long by 2 feet 10 inches back to front over desk and seat. The position of door and fireplace should be noticed; were the door, for example, placed at the other end of the room, then a three-feet gangway would be necessary along this wall, adding more than 7 per cent. in each case to the area required. Fig. 3 shows a class-room for twenty-one boys with the door in such a position, the room being much wider than it is long, which, although it decreases the length of this gangway, yet wastes more space at the master's end of the room. On the arrangement of Fig 1, 449 square feet accommodate twenty-five boys, but in Fig 3 481 feet only admit of twenty-one boys; the actual loss, if the areas had been equal, would thus have been nearly six boys. Further, the latter room would have to be at least one foot higher, adding still further to the space enclosed and proportionately to the cost. Continuous desks are never now used in newly-equipped rooms of secondary schools; dual desks are sometimes *employed, but are only* allowed by the Board of Education in elementary schools. The use of such desks will, of course, entirely alter the plan of the room, not only by the smaller desk length per boy, usually 3 feet 4 inches for two boys, but by the decrease in the number of gangways.

DESKS.

The foregoing comments as to planning have involved some reference to desks; and without attempting to describe the many various forms, a few good characteristics may be added. The edge of the desk should be vertically over that of the seat, and to insure this, both may be fixed on one support or pair of supports (generally of cast iron), when any fixing to the floor will hardly be necessary. Adjustable desks should, as a rule, be avoided, but desks of two or three different heights in one room will be found of service. The following heights for seat and lower edge of desk respectively are suggested: 15 and 27, 16 and 29, 17 and 30 inches. If the smallest desks be placed in front (and the smallest boys will, for the most part, be the juniors requiring the greatest attention), the slight rise towards, the back of the room will be found to aid supervision. Desks should have a slope of about fifteen degrees, and a sloping footboard beneath will prove a great comfort to anyone using them for lengthy periods.

THE BLACKBOARD.

The cumbrous and often unstable blackboard upon an easel should be avoided; not only is it apt to retreat when written upon, but when a three-legged easel is used the angular position of the board often makes the whole surface difficult to see. The blackboard area provided in a class-room is usually absurdly inadequate; it is rapidly covered, and nothing can be more discouraging to a slow writer than the frequent experience of having the board cleaned for further work before he has had time to take down or digest its contents. A great deal of time on the part of the master might be saved and devoted to individual explana-

tion were he provided with stencilled diagrams for all his more important and recurring blackboard efforts, but this is hardly the place for such suggestions.

The blackboard should, if possible, slide against ıe wall with the help of lines and pulleys, or, if iis is too costly an arrangement, it should be ıed to the wall, and in such a case must be long ıd narrow. There is probably no one who will t at times be glad of at least forty square feet of ard in his class-room, and, if well lighted wall- ıce does not admit of such an area within reach a fixed board, a greater height may be employed providing a couple of strong but lightly-framed ps below the board, which may be pushed into out of position by the foot. Every board ould have a narrow chalk-dust box along its ıole length, and several small pigeon-holes, ping inwards, should be fixed close at hand to ntain those most valuable aids to differentiation any kind of blackboard work—coloured chalks. s regards the material for the board itself, slate is st, but is heavy and costly. Bass wood is itable for a wooden board, which should be blackened as soon as it shows signs of greyness grease. Black plaster as a finishing coat to backing of Portland cement, forming the surface the wall itself, is sometimes used as a substitute r, or supplement to, the ordinary blackboard. he writer has examined such a wall surface which s been in use for one year; it was cracked in veral places and by no means dead black, but took alk well, and seemed pleasant to write upon.

OTHER FITTINGS.

The master's desk should be raised upon a atform not more than six or eight inches high, d of sufficient area to allow a boy to stand along- le the master upon it for the correction of work. inds should be fitted to all rooms unless the pect is north, they should be buff or light green lland; and a valuable means of regulating the ht is afforded if two blinds, each capable of vering half the window, are fixed horizontally on parate rollers at the centre of the window, the per one to pull up by a cord passing over a lley at the top of the window casing, the lower pull down in the ordinary way. In the late ernoons in summer these lower blinds can screen e desks and their occupants, while light and air n still be admitted through the upper part of the ndow.

For wall-colouring, dark and also glaring colours cluding white, should be avoided, though white ay be a great help in a poorly lighted room tting no sun. A light green in flatted paint or ashable distemper seems most suitable, and, in e absence of a glazed brick or other dado, a low do rail, with the wall below finished with similar int containing varnish, will help to keep the walls an at elbow height.

ARTIFICIAL LIGHTING.

The most economical and effective arrangement of lights, except in first cost, is that giving the greatest distribution. The actual power of the lights required for a given room has not yet been agreed upon, even for stated conditions, perhaps the chief of which would be the colouring of the walls and the height of the room. The occasions on which artificial light is required will, for early morning and for afternoon lighting, depend very much upon the aspect of the room and the reflecting power of external objects; hence, in a day school, the importance of this problem may vary much for different rooms. The ordinary fish-tail gas-burner is very inefficient, a great air consumer for its illumination, and often fretful in its behaviour. Where gas is in use, the recently introduced inverted mantles for incandescent lighting will be found economical and effective. These mantles have a longer life than the older form, they throw the light down without shadows, and are made for quite low power (about twenty-candle power and upwards). Tinted opalite shades, to reduce the proponderance of rays from the blue end of the spectrum, may be fitted to such lamps if thought necessary. Where glow lamps are used the number required will be at the rate of about one sixteen-candle power lamp for every three boys in the room. Much is written nowadays about the evil effects of naked lights upon the eyesight, but insufficient light is a much greater evil, and it should be remembered that frosted globes absorb about 50 per cent. of the light, so that if such lamps are to be used the lighting power for the room should be doubled. Good distribution makes this concealment of the light of proportionately less importance. The lights should be hung so that the balance of illumination favours the left side of the desks.

VENTILATION AND HEATING.

These are matters which really concern the school buildings as a whole, but a few words may be said upon them here. Open fires are most pleasing, and also most extravagant in fuel and attendance, and often much too local in their effects. When used, some arrangement for ventilation should be contrived with them; they can, for example, be made to introduce fresh warmed air, or, by a little treatment of the fireplace, to extract foul air from the top of the room, without introducing a ventilator into the chimney breast, which should never be done.

Hot-water radiators are efficient, easy to manage and economical; they should be placed under the windows in connection with fresh-air inlets having openings equivalent to five square inches of actual aperture for each occupant. A fan-light over the door will help in securing cross ventilation when this is not available through ordinary windows; and extract flues extending from floor to ceiling with controllable openings at floor and ceiling levels (the former for use when the windows are open at the top) should, if possible, be provided at points remote from the windows, such flues from the various rooms being connected with an extract fan

which, where electricity is available, can be run by a motor very reasonably during the day at reduced day-load rates from any public supply. Since the aim of a heating system should be to supply warm radiating objects and not hot air, the plenum system, apart from the question of cost, should probably be avoided, except in special circumstances.

It may be objected that this article has dealt with the problem of the class-room *de novo*, which is more the business of the architect than the master; but it will be conceded that the latter should be familiar with the necessities of this important problem. It is almost impossible to generalise upon the improvement of existing class-rooms on account of their immense variation, but it is hoped that the foregoing remarks will serve to suggest what can be conceded in the case of rooms showing non-compliance with any of the points raised. It is seldom that nothing can be done to improve a bad room, either by re-arrangement of the desks, or (as in a basement) by the use of prismatic glass, holophane lamp-globes, or redecoration, or if a room lacks air, by suitable wall-openings. It is true that such changes must often be effected "at a figure." The financial value of such investments in producing increased efficiency, in view of the number of modern school-buildings springing up at the present time, it would hardly be appropriate to descant upon here.

AN AMALGAMATION OF THE OLD AND NEW METHODS OF TEACHING FRENCH.

By Neville W. Ross, B.A., B. ès L.
Senior French Master at Bradford Grammar School.

TWO years ago it was decided to introduce the teaching of French on "neue methode" lines throughout Bradford Grammar School. We started with a distinct advantage, insomuch that the whole of the French was taught by two members of the staff; this ensured complete continuity of method.

The chief difficulty, as in so many schools of this type, was how to maintain the standard of results hitherto obtained in examinations, and yet conform to the tenets of the "reformers." In the circumstances it seemed to us necessary to retain certain well-tested plans in the older methods, which might, if advisable, be subsequently modified. We therefore decided to amalgamate the following ideas of the "old" method:—

(1) The occasional use of English in teaching, especially where it seemed necessary for explaining any important grammatical point.

(2) The systematic teaching of grammar from an early stage.

(3) A sparing use of translation into English, to enable the teacher to be certain that every word and idiom is really understood.

(4) The systematic making and learning of vocabulary.

(5) A sparing use in the highest forms of translation from English into French.

The following concessions were made to the "neue methode:"

(1) A thorough training in pronunciation by means of phonetics in the first stages.

(2) The use of "realien" (pictures, parts of the body, &c.,) as a means of acquiring vocabulary.

(3) French to be used as much as possible as a means of communication, care however to be taken that the class understands all that is said.

(4) The reading book to be the basis of instruction.

We propose to give some idea of how the amalgamation has worked in practice, and then to summarise the results we claim to have obtained.

Division of Work.—It seems to us that there are three stages through which the average pupil passes in the acquirement of a modern language.

(*a*) The elementary stage, in which he learns the rudiments of the language under as pleasant conditions as possible; (*b*) the intermediate stage, in which he is preparing for some examination of an elementary character, and (*c*) the advanced stage, at the end of which he will probably take an examination involving a considerable knowledge of the language, or be more or less equipped for a business life. We will, for the purpose of clearness, divide our material of over 300 boys, from the ages of ten to sixteen years, into these three stages; the first two covering a period of three years each, and the last consisting of one year.

Elementary Stage.—In the elementary stage the time-table allots to French, the only modern language taken for the first few years, four periods of forty-five minutes each per week. At first sight this period of seven years may seem unusually long, but the scheme has to be so arranged that the elementary stage must include forms relatively high up the school, in order that boys coming to the school at the age of twelve or thirteen years without having done any French may be grounded for at least a year before entering the intermediate stage. A backward boy may in consequence be more than three years in the elementary stage, in our opinion an advantage to him; but, on the other hand, a boy of average ability in the lower forms will probably reach the end of the elementary stage in less than three years. Where modern languages are taken in sets, two terms may be easily reckoned for each such division instead of a year. This would make about four and a half years for the whole course. In practice, a scholarship boy entering the school at the age of thirteen frequently reaches the advanced stage at the beginning of his third year.

The teaching of phonetics at this point is comparatively easy, as the boys, having learnt no French whatever, are most responsive to the new

idea and make rapid progress. The class is first of all thoroughly "drilled" in the pronunciation of the symbols of the phonetic transcript. These are written on the blackboard, and the sounds given by the master. They are then imitated by the class in chorus, a few simple explanations being given as to rounding the lips, opening the mouth, &c. From the very first lesson, the names of objects in the class-room are given and practised by the class, these words gradually forming illustrations of the use of the phonetic symbols.

Parts of the body, the clothing, and a few easy expressions of daily use in the class-room, are practised. Simple songs, such as "Frère Jacques," "Le Meunier," "La Porte St. Denis," are then taught; a few games, such as "Le Loup, Pigeon Vole," &c., are learnt and played in class; the whole being taught, so far as the written work is concerned, in phonetics. It is of importance at this point to make the instruction as amusing and as attractive as possible. Words learnt while the pupil's interest is excited remain much longer in the memory than those acquired in a lesson which is dull and uninteresting. Songs and games are chosen in which various boys can play different rôles, and every occasion is seized to make the boys "act" the verbs they are learning and to touch the objects named. The homework for the first year is chiefly confined to the revision of phonetic work done in school.

The transition to ordinary spelling from the phonetic transcript requires a great deal of care; otherwise there is a tendency to confuse the two spellings. The first step towards acquiring the new orthography is to put the phonetic symbols on the blackboard with French words opposite to each to illustrate the various spellings of the sound: care being taken to give words familiar to the pupil. For instance:—

ɛ: pain, fin, tiens, faim, &c.

e: et, parle, je donnai, &c.

All the songs, vocabulary, and phrases learnt the first year are then utilised for practice in the transition from phonetics to "orthography," and are set as spelling lessons. Exercises are now done in ordinary spelling, and pieces that have been previously read are frequently dictated to the class.

Practice in the writing of French is also obtained by the introduction at this point of vocabulary note-books. All new words, read or heard, are entered in three columns. The first column contains the word as found in the text; the second column, the word, if a noun, with its article to show its gender—if a verb, with its infinitive and primary tenses; and the third column gives the meaning in English. These words are set every week as a home lesson, and are heard from English into French. Constant revision of these vocabulary note-books seems one of the best solutions of the problem of how to build up a good and ready vocabulary.

No doubt, a word learnt from a picture, from an object or from some lucid explanation in French, remains longer in the memory from the fact that the pupil's interest is aroused and a more lasting impression is made, but this impression is by no means permanent, and revision in some form or other is necessary. Further, the theory that the impression in the memory is more durable, because it is "direct" from object to French word without the interposition of a spoken English word, may be fairly questioned; it has always seemed to us that the process that takes place in the child's mind is an almost unconscious mental forming of the English word before translating it into French. The durability of the impression may therefore entirely depend upon the amount of interest in the new word excited in the child's mind. After giving the so-called "direct" method of teaching vocabulary a trial of some terms, and finding no speedy means of revising the long association of ideas necessary for a thorough revision of the vocabulary, we decided to revert to the old method of continual repetition as more expeditious, and on the whole more efficacious. The revision of these vocabulary notes also affords a better mental training by enabling the teacher to get something out of a boy and not merely letting him absorb what probably cannot afterwards be extracted.

In the second year of the elementary stage we make a commencement with the essentials of grammar. As far as possible, this is done with the material already learnt, by taking examples of the various points from the phrases and songs already learnt, and from these extracting a rule. Our experience has been, however, that an immense amount must first be read and digested before sufficient examples can be obtained for thoroughly driving in the desired rule; we supplement these explanations, therefore, by exercises on the point involved. These exercises contain sentences with the word illustrating the point, in English or represented by a dash. A few sentences on the partitive article and on the relative pronoun will illustrate this:—

Le ministre a—projets ambitieux;

Il a peu d—amis;

L'homme *of whom* vous m'avez parlé;

Le ministre *by whose* influence il espérait gagner le poste, &c.

These sentences are read by the class with the missing word supplied by one boy. The exercise is always first translated to the class by the master, the words being added to the vocabulary books for the week's home lesson. After being thus gone through in school the exercise is set for a written home lesson, and finally, after being corrected, is set as repetition for the following grammar home work, a short lesson being added from the grammar-book used at this stage. The simple tenses of verbs, both regular and irregular, are taught conversationally by the "direct" method, as for instance:—

Henri, *avez-vous* faim? Oui, Monsieur, *j'ai* faim.

Louis, dites à Henri qu *'il a* faim. Henri, *tu as* faim, &c.

The tense-endings, however, are also all

"drilled" in by setting a few tenses at a time as a home lesson; further practice in the verbs is obtained by changing into different persons, number, tenses, &c., the verbs already learnt in the songs, &c. It is remarkable how soon the right tense and person can be given in a piece handled in this manner.

The work is very similar to that of the second year, but easy reading pieces, such as short anecdotes, conundrums, &c., are taken and worked through in a similar manner. Care is taken that each piece is treated systematically; it is first read several times in phonetics, then once or twice in French; it is then translated rapidly, the words being added to the vocabulary books for future revision. Questions and answers suggested by the text are then taken, first with the books open, then closed. For instance, the piece can be changed to various tenses by suggesting the words *demain*, *hier*, or *aujourd'hui* to be used with it; or, again, it may be read as the contrary. Finally, the story is related right through by a few in the class, and is set as repetition for the next home lesson.

The keynote here is that everything that has been learnt should practically be known by heart, but only after it has been grasped thoroughly by the class from every point of view of vocabulary and grammar. Mere ability to repeat a piece parrot-like serves no ultimate purpose.

In the elementary stage, besides the pictures (Hölzel's) and *Realien*, which play an important part as a help in making the lesson interesting, the books we have found very useful for working on the lines described in this article are the First and Second French Books of Prof. Victor Spiers and his "Drill" Exercises.

(*To be continued.*)

THE TRAINING OF SECONDARY SCHOOL TEACHERS AT THE UNIVERSITIES.

VII.—DURHAM UNIVERSITY: (*a*) DURHAM, (*b*) NEWCASTLE-UPON-TYNE.

THE training of secondary teachers is undertaken in each of the two sections of the University, viz., in Durham, and in the College of Science, Newcastle-upon-Tyne. The students prepare for the "Diploma of the University in the Theory and Practice of Teaching." Candidates must be graduates of some university of the United Kingdom, or have attained to some other standard approved by the Board of Education for the registration of secondary teachers. The course extends over a year, although there is some remission in the case of graduates of the University who have taken "Education" as part of their studies for a degree. Six to eight hours' lectures per week are given during the session in preparation for the examination, which includes:

(1) Mental and moral science in relation to teaching; (2) a selected portion of the history of education with set books; and (3) the health conditions of schools; the teaching of the subjects in an ordinary school course, and the principles of teaching.

The practical work includes teaching in primary and secondary schools.

In Newcastle, part of this work is done in common with students of the Day Training College who are preparing for positions in primary schools. This joint training answers admirably, and is especially useful to the secondary students who are new to the work of managing classes and of teaching. The conditions in the primary school are more simple than those of the secondary school, and the student's attention is necessarily directed definitely to method. It is also a great gain for these beginners to be in schools with men and women (of about the same age as themselves) who have been trained in teaching, and to work side by side with students from the Day Training College who have already acquired a certain skill in class management.

This association of primary and secondary teachers in common work is of great import. It is believed that there will be an ultimate gain when the teachers in secondary schools know from actual experience the working conditions and possibilities of primary schools. Such knowledge will do much to make the transfer of scholars from primary to secondary schools possible, and will be of great assistance in classifying beneficially the scholars promoted. So far, no difficulty has been experienced in obtaining such practice. The head teachers of the primary schools take great pains to make the experiment successful, and the students appreciate the benefit they receive, and show keen interest in this part of their practical work. At the beginning of the school practice, lessons are given to classes of children by the staff responsible for training, a statement being first made to the students as to the work that will be attempted, the method that will be followed, and the aim the teacher has before him. The students are invited to follow the lesson carefully, and to consider its effectiveness. At the end it is frankly discussed. Other lessons are given during the course by more experienced students, or by the class teacher. The secondary students are then allowed to prepare lessons, which are discussed with their tutor before being given to the classes. After this course of observation and tentative practice, they work under the supervision of a class teacher until they acquire some ease in class management. Criticism lessons, attended by a *small number* of students, are given during this period.

When the students have mastered the rudiments of the art, and have acquired some facility in teaching, and have experienced the responsibility of interesting and guiding a large class, their attention is directed towards their specific work. They are attached to a secondary school. The head teachers of these schools have shown great willingness in accepting students. In Durham, the

Grammar School, the Choir School, the Church High School for Girls, and the Johnstone Institute, have allowed students to attend for practical work. In Newcastle, the Girls' High Schools, the Central High School, Allan's Endowed School, Rutherford College, and Gateshead Secondary School, have accepted students for practical work.

Not more than three students are attached to any school. After a short probation, during which the students become accustomed to the school, they carefully prepare and give lessons under the supervision of experienced teachers and of the lecturers and Professor of Education.

Up to this stage the teaching has been general, and has dealt with the subjects taught in the lower forms of the secondary school. The students now consider methods of teaching two special subjects suitable for the higher forms. This is found to be necessary, seeing that so many appointments are made in schools that demand special knowledge of particular subjects; instruction is given in the best methods and the assistance is obtained of teachers who have devoted special attention to these subjects.

The subjects for the written examination have already been mentioned. For the practical examination four lessons are prepared, and one selected, to be given before the examiners. As far as possible, the lesson is given to a class with which the student is familiar. The fee at Durham for a session of three terms is £21, at Newcastle £20. This includes the cost of lectures and practical work. The examination fee for the diploma is £2. Further information can be obtained from the Secretary of Examinations, Durham, and from the Secretary, Durham College of Science, Newcastle-on-Tyne.

THE STUDY OF FOREIGN LANGUAGES IN THE NAVY.

By DE V. PAYEN-PAYNE.

AS usual, the Admiralty has moved before the War Office in the matter of encouraging a greater number of officers to study foreign languages than has been the case up to the present. The international expedition to Pekin was a humiliating experience to our officers. They could only talk with the American contingent, whereas those of all the other Powers—even the Japanese—could talk together, either in French or in the native language of their interlocutors. It was soon after that the Admiralty appointed an instructor in French to the Channel Squadron, to continue the incomplete instruction of the midshipmen after they had left H.M.S. *Britannia*. The same office now brings out what may be regarded as a serious endeavour to remedy the disadvantages attending the want of familiarity with foreign languages shown by naval officers, which is a grave reflection on the intellectual efficiency of the Fleet.

The changes are based on the recommendations of a Departmental Committee which has been sitting for some time to consider the whole subject. The number of officers who will be allowed to study abroad on full pay has been increased from ten to twenty. These officers were in the past only allowed full pay if on their return from abroad they passed a qualifiying examination for interpreters.

In the future they will be granted full pay in all cases, and if they pass the qualifying examination they will receive an additional gratuity. This rule will induce officers not to apply for such a post with the idea of having a pleasant holiday. The time allowed abroad varies with the language. For Japanese, the time allowed is twelve months; for Russian, nine; for German, Dutch, and Greek, six; and for French, Italian, Spanish and Portuguese, four months. These periods appear hardly sufficient to enable an officer, however industrious, to pass the somewhat stiff interpreters' examination. If he passes it in Japanese he gains a gratuity of £200; in Russian, of £150; in German, Dutch, or Greek, of £70; and in the Romance languages, of £50; moreover, he obtains additional daily pay whilst employed as interpreter. For passing as Acting Interpreter, the duration of residence abroad and the gratuities on qualifying are half the above-mentioned rates.

There is a salutary regulation that interpreters will be required to re-qualify every five years; and prior to each re-qualifying examination they may be allowed full pay for a month while studying abroad. Officers who have passed these examinations are to be qualified to give instruction to junior officers on board ship, and will receive 5s. for each lesson of one hour's duration, of which not more than four in one week must be given. This is doubling the former rate of half-a-crown an hour, but few qualified teachers would say that even now it is an extravagant remuneration. The midshipmen thus instructed are to have prizes amounting to £130 annually for proficiency in French, German, Italian, and Spanish. These prizes are of the value of £10 and £5 each. The study of Japanese is especially urged on the officers of the Fleet, seeing that they will probably have much converse in the near future with the naval officers of our ally in the Far East. The alterations in the regulations have as their object not only to secure a good colloquial knowledge of the language, but also a higher general qualification for the appointment as interpreter. The examinations will now take place three times instead of twice a year, at the same time as the corresponding examination of officers in the army.

This is an additional proof, if any were needed, that the Admiralty have a genuine desire to improve the education of the officers under their control. Last year, we recollect, they took expert advice from the Modern Language Association before settling on the modern language syllabus to be followed at the new Naval College at Osborne.

LONDON AT SCHOOL.[1]

THE value and extent of the educational work accomplished by the late School Board for London have been the subjects of several volumes published in recent years and reviewed in these columns. Prominent among them may be mentioned Mr. Spalding's "Work of the London School Board," prepared for presentation at the Paris Exhibition by direction of Lord Reay, and the "Final Report of the School Board for London, 1870-1904," submitted at the concluding meeting of the Board on April 28th last. Mr. Philpott covers the same ground as do the previous writers, but he does this so attractively, and with so evident an appreciation, that we welcome his well-illustrated book, and hope it may secure a wide popularity. Writing as Mr. Philpott does from personal experience of the work of the London Board schools — an experience he acknowledges gracefully in his dedication—his book should serve to convince any person who still has doubts that the elementary schools of London established by the late Board are among the most potent agencies at work for the humanisation of the children of the workers of the metropolis.

An expression of opinion by Sir Charles Adderly—a Vice-President of the Council before the passing of the Act of 1870—quoted by Mr. Philpott, illustrates how far public opinion has travelled in about forty years: "Any attempt to keep the children of the labouring classes under in culture after the very earliest age at w could earn their living would be as arbi improper as it would be to keep the boy and Harrow at spade labour." Now, fo with the age of compulsory attendance fourteen, and the general appreciation o spread scholarship system, it is clear tha have learnt to understand the value of e and that politicians have come to reco

A Cookery Lesson (Montem Street Centre).

Playtime at Tavistock Place School for Physically Defective Children. (In the Duke of Bedford's Garden.)

popularity of legislation des improve the education give schools.

Readers of Mr. Philpott's b come to it without much knowledge of the varied natu agencies at work in connec the schools—means designed to instruct the children but educate them in a wider and tr —will be impressed alike by votion of the teachers and th minded policy of the Boar success which has attended of the schools since 1870 may sured to some extent by c the attitude of parents and towards the schools now, w when the first Board comme labours of thirty-five years read, "In some districts of building a Board school planting a fort in an enemy try. The building was the of tyranny and oppression, and often th keeper had difficulty in protecting it f licious damage. The School Board public enemy, depriving honest citizen services of their children from profitable ment in shop and factory, and setting the

[1] *The Story* of the School Board, 1870-1904. By Hugh B. Philpott. *Illustrated. xx + 314 pp.* (*Fisher Unwin.*) 6s.

profitless tasks of learning to read and write. The teacher was a base creature who exploited the labour of the children for his own gain," &c. Of to-day, Mr. Philpott writes: "Shakespeare's 'whining schoolboy, creeping like snail unwillingly to school' is no description of the average Board school boy. Mothers are sometimes distressed at the eagerness of the children to go to school, even when suffering from slight indisposition, and many children are glad when the holidays are over, not because they are phenomenally studious, but because the occupations of the school are pleasanter than those their homes afford."

On the whole, too, the education given in the schools is well adapted to the future needs of the children. While, as Mr. Philpott is at pains to make clear, the educational ladder has been firmly established by which a Board-school boy may, if he has brains enough, become senior wrangler (as witness the case of Mr. E. Cunningham), the average boy becomes an intelligent and increasingly thoughtful citizen. In addition to the work of the class-room which provides the necessary intellectual training, there are manual training exercises, physical exercises, in some cases organised games and athletic sports, and often social evenings, and these together do much to provide a healthy body and a wholesome character. Girls have every chance of becoming intelligent and enterprising housewives. They are instructed in a practical manner, in needlework, cookery, and laundry work, and some girls are fortunate enough to be able to attend housewifery centres where they learn to perform all domestic duties from the cleaning of a grate to the washing of a baby.

At the Hackney School Sports, June, 1903—The Hurdle Race.

Nor are the healthy children alone cared for. There are special schools for the blind, deaf, and physically defective. Cases of moral obliquity are specially dealt with in truant schools and industrial schools. And in addition to descriptions of all these, Mr. Philpott paints a charming picture of the Board school as a social force. In short, this is a book to be read if it is desired to cultivate an optimistic outlook on the future condition of England, for what the London School Board decided to do one day, provincial boards were found doing the next.

ELIZABETHAN CRITICAL ESSAYS.[1]

THIS is an admirable book, full of learning and scholarship. It contains not only critical works such as Sidney's "Apologie for Poetry" and Puttenham's "Arte of English Poesie," but a number of less known pieces bearing on the subject of literary criticism. Mr. Smith, following the example of Mr. W. P. Ker, has turned his attention to the prefaces of old books, with interesting results. He makes accessible to us, amongst others, Whetstone's "Dedication to Promos and Cassandra," which deals with the favourite Elizabethan theme of Decorum; E. K.'s epistle to "The Shepheard's Callendar," with a recommendation of the "new poet"; Stanyhurst's "Dedication" to his translation from Virgil; several prefaces by Nash; Chapman's "Preface" to his Homer. Add to these Webbe's "Discourse of English Poetrie," King James VI.'s "Reulis and Cautelis," Lodge's "Defence of Poetry," Campion's "Observations in the Art of English Poetrie," Daniel's "Defence of Ryme," and a number of other documents. These are reprinted with scholarly care, and would alone give cause for gratitude. But the editor has added to his services by an excellent Introduction, in which he sifts and compares his authorities, showing their main currents of thought and criticising their defects. The sections of the Introduction will indicate its scope: The Puritan Attack, the Defence, the Classical Purpose, the Special Problems, Decorum, Prosody, Diction, the Romantic Qualities, the Critical Temper, the Sources. With the aid of this and the notes, it is possible to estimate both the positive value of the writings, and the extent of their originality. Most of the notes are based on original research of a thorough kind, and the book will for the first time make it possible for the student to see England's debt to Italy, Spain, and France. It is remarkable how great the debt to Italy is, and how small (in critical matters) to France and Spain.

We wish it were possible adequately to deal with this book; but, although we cannot enter upon an examination of the whole subject here, we must

1 "Elizabethan Critical Essays." Edited with an Introduction by G. Gregory Smith. 2 vols. xcii. + 431 and iv. + 509 pp. (Clarendon Press.) 12s. net.

express our appreciation of the acuteness of Mr. Smith's analysis. He sees the essence of a writer's intention, and in a few words indicates his importance, often in a telling and epigrammatic way. The reader sees how sound these critics were at heart, how genuine the attempt to form a theory of poetry or style, how true their instinct against inkhorn pedantry, forced archaism, or indiscriminate borrowing from abroad. A number of new points are brought out which the ordinary writer of critical books does not recognise. The hexameter-craze was discredited by sane critics even when it was at its height. Daniel saw the principle of what we may call equivalent weight in verse-units, which forms the basis of certain Oriental metres called the Arya, and is more important for English prosody than is usually recognised. It explains, for example, the peculiarity of what may be called the pyrrhic foot in English iambics, coupled with the spondee in unexpected places. But these are only one or two of a host of topics which call for discussion, and we must reluctantly leave the book, with a word of congratulation to the Clarendon Press for adding another to its list of works on English literature. What we most need now is texts, and we hope the Press will not stop here, but will reprint some of the larger and more important prose works of the great age which are now luxuries for the rich.

OLD-TIME SCHOOLS AND SCHOOL BOOKS.[1]

THIS book, it should at once be stated, deals with the old schools of the United States. It reminds one of Mr. Andrew W. Tuer's "Pages and Pictures from Forgotten Children's Books," with its 400 illustrations, and his "Stories from Old-fashioned Children's Books," with its 250 cuts. Still more, perhaps, it invites comparison with Alice Morse Earle's "Child Life in Colonial Days," especially the chapters in the last-named book on Schools and School Life, Horn Book and Primer, School-books and Penmanship.

Perhaps one should say that Mr. Clifton Johnson provides a book which is supplementary to those named, and one which will be thoroughly acceptable to such as have delighted in these forerunners. He has particularly dwelt on illustrations of Massachusetts' educational history. The book contains over 200 illustrations, which have the full interest of quaintness and picturesqueness for lovers of child-life on this side of the Atlantic as well as on the other. Indeed, the account of education, school books and apparatus, and methods of teaching, is not so dissimilar from what was taking place in Great Britain. Many copies of the books which were issued here found their way apparently to Massachusetts. the Horn Books were a similar institutio mother country and the colony.

Many of the school books bear the Lor print, *e.g.*, "The Child's Weekswork, or Book so nicely suited to the Genius and (of a Little Child, both for Matter and that it will infallibly Allure and Lead him a way of Reading with all the Ease a pedition that can be desired." By Willian flay. 1712. This certainly is not a book find in England, nor is "The Protestant 1715, though both published in London. F "Universal Spelling Book" and the ' Instructor" are better known. The Arit of Hodder and Dilworth are familiar, colonial text-books described are almost u in Great Britain—perhaps, except, Noah W "Spelling Book." Comenius's "Visible the "Orbis Pictus," was used everywhe course it figures in Mr. Johnson's book. A the earlier books are the "Colloquies of rius" and Coote's "English Schoolmaster of the most interesting chapters is Mr. Jc collection of Fly-leaf Scribblings. Here i and serious warning against theft: "Wh steals this | book away may | think on th judgment day when | Jesus Christ shall and say | Where is that book you | stole a

Then you will say, I do not know.
And Christ will say, Go down below."

Here is a personal monument less lasti brass :—

> Francis Barton is my name. America is my nation.
> Pittsfield is my dwelling-place. And Christ is my
> When I am dead and in my grave, and all my rotten,
> It's you'll remember me, or else I'll be forgotten.

The height of schoolboy sarcasm is in :—

> If there should be another flood,
> Then to this book I'd fly;
> If all the earth should be submerged,
> This book would still be dry.

Illustrations, verbal and pictorial, of all things educational, besides views, are given slates, quill pens, inkstands, writing-san powder, samples, a revolving alphabet, rew merit, scroll-work. If anyone wants t how to make a pictorial illustration of pr interjections, passive verbs, he can find is done in Mr. Johnson's book. And alo the instruction he will find a constant fund cational amusement—which he will not eas elsewhere. It is a pity there is no index table of contents describes Chapter V. as " mar Schools," whereas the chapter is on S Schools.

[1] "Old-time Schools and School Books." By Clifton Johnson. With many illustrations collected by the Author. (Macmillan.) 8s. 6d. net.

ALL education which is merely mechanical must carr many mistakes and deficiencies, because it has no sure to work upon. If education is to develop human natur it may attain the object of its being, it must involve the of judgment.—KANT.

PROFESSOR REIN AT MANCHESTER.

DR. WILHELM REIN, professor of pedagogics at Jena University and well known to teachers throughout the world, recently visited Manchester. During his visit the University of Manchester conferred upon him the honorary degree of Doctor of Letters. Dr. Rein delivered the Warburton Lecture at the University, and besides this gave a public lecture on educational ideals; he also opened an extension of the practising school in connection with the Department of Education of the University and gave a third address. Prof. Rein spoke throughout in German and without notes. We are indebted to the account in the *Manchester Guardian* for the following abstract of his speeches.

UNIVERSITIES AND THE STUDY OF EDUCATION.

The subject of the Warburton Lecture was "The Universities and the Study of Education." Dealing first with the purpose of pedagogic studies, Prof. Rein laid stress upon the fact that the study of education has been largely excluded from the universities in a period when all other studies have more and more claimed full recognition. He adduced various historical reasons why pedagogy has been so excluded, dwelling especially upon the jealousy of the State, which in various countries has feared lest the freedom of the university teaching should hinder the narrower aims of officialism. The effect has been that in most universities education has only been treated as a minor subject of study by philosophers and theologians. From the university point of view, the special aspect of these studies is concerned with the attainment of higher ideals for the future generation. And it is the specific function of the teacher to point towards his ideal, for the future of a nation depends not alone upon the power of its ideals. "Wealth may have its limits, but the mind of man has no limit," he said, "and all are welcome within the portals of knowledge." Hence the great problem in the study of education is the organisation of an ideal system of culture for the whole race. Dr. Rein indicated briefly the two methods in which education may be studied in the university—(1) historically, from the time of Herbart to the present day, and (2) systematically, reviewing in turn the various sources from which the student of education builds up his science. There are, he admitted, many obstacles to overcome if one seeks to treat pedagogy in a scientific manner. First of all, there is the prejudice that it is no science, but rather a compilation of different experiences and opinions. And, even if one starts from the position that pedagogy may be treated scientifically, the fact remains that there is no sound ethical system and no psychology based on experience to furnish first the aim and then the means to attain it. Then, too, pedagogy has been declared to be an art only, and not fit for universities. Dr. Rein urged that a system of pedagogics must be built up on two fundamental sciences—ethics and psychology. Ethics is important because it points out the aim of education, and the study of education is an application of ethics, bringing the ideal into relation with the realities of school practice. Practical philosophy reveals to us the highest aim of human life and work—the moral ideas which men ought to try to live up to. Ethics sets forth these ideals, but it is not concerned with the practice of them—for that purpose another branch of science is needed. This is the task of pedagogics. It has to see that the young are educated so that they may be able to master these moral ideas in later life. Such pedagogics is applied ethics. The relation of pedagogics to psychology is equally important. Knowing the aims which have to be reached by education, the question arises, "How are they to be reached?" Psychology teaches us the possibilities for the culture of our minds. It reveals the possibilities of progress in culture by displaying the laws of mental life. And so pedagogy may be called applied psychology when the means of education are under review. Ethics and psychology combine to set before us an ideal of a general liberal education, in contrast with the narrower views of those who treat education merely as a preparation for a calling in life.

In connection with the study of the curriculum, the aid of every branch of study in the university may be appealed to, since all the sciences and arts need in their turn to find a place in the curriculum of a school. This is why it is of peculiar value to place pedagogy in the university, since the teachers of this study are brought into contact—sometimes, indeed, into conflict—with their colleagues who teach other subjects. But it is by such conflict, by compelling each university teacher to investigate the principles upon which he relies, that truth is more and more developed in the freedom and vigour of university thought.

EDUCATIONAL IDEALS.

In his evening public lecture Dr. Rein spoke of educational ideals. The first aim of education, he said, is to make life worth living, to enable us to achieve the best in life. Going back to the seventeenth century, Prof. Rein traced the growth of ecclesiastical culture, which still exerts its force, he pointed out, although the rise of the universities and of modern learning have offered a certain resistance. The State ideal of education was next considered. All the State can demand, Dr. Rein said, is that the children should be trained in patriotism. Civic duty and love of fatherland must in all ages be a permanent element in education, but it cannot be endured that children should be controlled in other matters by individuals who for the moment direct the school. The striving after ideals must not be delayed until a nation has found the wealth to indulge in them. Dr. Rein then drew attention to the way in which the German people, influenced largely by Greek ideals not wholly in harmony with modern democratic conditions, have modified those ideals according to the ideals of the industrial and scientific world. Art has also offered its ideals, but æsthetics cannot be severed from morals, as, indeed, the fate of Greek culture has shown. In Germany to-day the neglect of art in earlier times has led to an excessive devotion to art at the expense of the highest and noblest ideals. This highest and noblest ideal lies in the moral life, and here and not elsewhere is the test of life, both for the individual and for the nation. No development of modern culture can set aside the Ten Commandments. An absolute standard of the ideal life exists, and must be the basis of every type of modern culture—based on duty to our neighbour, the seed of all true socialism. The Christian State is only Christian when it cares for the whole society, and this is the merit of the social order in Germany—it has cared for the whole in the interest of the individual. The old morality based on the needs of the common social life must always be supreme, in spite of all attacks from new schools of philosophy.

TRAINING OF TEACHERS IN GERMANY.

Opening the new rooms at the Brunswick Street Practising School, Prof. Rein spoke of the training of teachers at the German universities. "The theories we apply," he said, "are not new, but they are not the property of the people. A hundred years ago Kant said: 'First we must have a practising school and then we can have normal schools; that is to say, we must have schools in which we can seek new methods and try new theories.'" These words of Kant were spoken at first to dull ears, but later their importance was understood. Men were found in Germany who made Kant's word a reality. Through them reforms have been brought about, and from the schools established at the different universities thorough masters and mistresses have gone forth—thorough because in their train-

ing theory was combined with practice, and only under such a combination can thorough teachers be trained. We should laugh at any man who put a notice outside his house, "Here swimming can be taught," if there was no water; but that was what some of the universities had done in the past. Theories exist, but there are no means by which they can be proved by experience. That proving can be done only in the practising school, and the importance of the practising school is two-fold. In the first place, the professor of education himself needs the school in order that he may ascertain if his theories are workable: and, secondly, the practising school is necessary for the training student. The training student must receive knowledge, and he must be able to practise it when he has gained it. Hence the necessity of the practising school. Without such a school, Prof. Rein said, he would not like to be a Professor of Education; and without it he could not undertake the training of teachers, for it is at the school that the difficulties of the subject are encountered and overcome. They are overcome, of course, more readily by some than by others, for the third factor, aptitude, differs in different beings. Theory and practice alone are insufficient, and natural aptitude depends upon the enthusiasm of the teacher and his love for his work. Here is the great difficulty in the training of teachers—theory and practice can be given them, but the emotional qualities cannot be so given. Much can be done to increase and strengthen love for the work, but that love cannot be created.

Speaking of the way in which the training of teachers is undertaken at Jena, Prof. Rein said the methods have been sufficiently proved, and the Government has recognised their importance. When his predecessor, Herbart, died the Government determined to maintain both the professorship of education and the practising school, because experience had been gained of the thoroughness with which teachers were trained by these institutions. In Jena they have first the theoreticum. One day in the week the student must present some piece of independent work to show that he has acquired the requisite knowledge. Secondly, they have the practicum. This is also held every week, and each member of the Seminar is required to show that he has sufficient practical knowledge of teaching. And thirdly, they have the criticum, in which experimental lessons are discussed and criticised and opportunities are given for the students to form independent judgments. Because, Dr. Rein said, it is altogether undesirable that the students shall retail only what they learn; the students must develop independence of thought, and the more so because there are students from almost every country, and it is necessary that each should adapt the methods they learn to their own national conditions and traditions. There are schools like the one in Manchester, in Bulgaria, America, France, Roumania, and other countries, and each shows its own individuality. It is true that time is sometimes lost by these methods of training, but that is immaterial so long as independence of thought is gained, and the students feel some satisfaction in arriving at their own conclusions, which give them encouragement for further work.

A RECENT official letter to the Edmonton School Board states that the Board of Education discourage the use of slates as far as possible in public elementary schools for the following reasons, amongst others:—(1) They are the wrong material for writing on, present the wrong surface, and involve the use of the wrong instrument. (2) They are insanitary and likely to propagate disease on account of the dirty habits that are inseparable from their use. (3) They encourage careless and inaccurate habits. Children using them sit in lolling and slovenly attitudes and are apt to write down in a hurry what first occurs to them, as mistakes are easily rectified; the quality of the work is thus often sacrificed to the quantity. (4) They render revision of the work impossible and thus prevent any regular records of progress being kept. Many mistakes are for this reason allowed to go uncorrected.

THE HANDLING OF YOUNG CHILDREN.[1]

I HAVE been asked to deal as practically as possible wi the business of handling young children. The only groun on which I can expect a hearing are that I have seen ma experiments, have had some experience and made some e periments myself, and have watched all sorts of educate and education-mongers, good, bad, and indifferent, for ma years.

This is an association for the advancement of science, but hope I shall not have betrayed the Education Section when say that I do not know whether there is a "science" of Ed cation at all. I know of several splendid endeavours to plac education on a scientific basis; but none of them seems t me to allow for the constantly changing bases of th sciences on which they are presumably built—metaphysics ethics, psychology, physiology, or the compendious socio logy.

What, however, is abundantly clear is this: that, for th practical purposes of the working educator, a multitude of ap plicable facts is constantly being supplied by the sciences mos deeply "immersed in matter"; by physiology, especiall psycho-physiology, by sociology, by ethics; and in that order or something like it, of particularity. That is, the good edu cator must remember that he deals primarily with the body then with the body and mind interacting; then with the bod and mind as affected by historical and social environment; an finally, with body and mind, so constituted, directed to a ethical end.

When I look at my child, I say to myself: "You must fir of all be fed well, kept clean, and must develop healthy tissues then, your intelligence shall, if I can secure it, grow pace fo pace with your physical capacity, since I know that the things are inter-dependent; next, your intelligence and bodi health germinate in, and are conditioned by, and mu therefore learn to operate in, this particular environmen determined by history and social conditions; finally, you a not only to be a healthy and intelligent animal, but are t live nobly, to be better than I am, to do more for the glory God.

What is true of the single child is, of course, true also, i these large respects, of children in troops of classes. But th very first duty of the teacher or educator facing his task i to note that each child has his own history; is not in al respects the same as any other child; must be separately con sidered.

Here emerges what seems to be Rule I. in the handling o young children. Do not force on every child the same dis cipline. I do not, of course, mean that single children o classes, if you have classes, are not to follow a routine "taking," as the cant goes, "the same subjects;" I mea that you must be prepared to treat one child differently fro another. From one you may expect more than from another Tommy will shrink and wither under a rebuke of which Poll takes no account. Polly may become bewildered without lo of virtue at a simple task which Tommy will accomplish whil he is criminally cracking a nut. Jacobus will tell you a fib i all guilelessness, and merely as a work of art meant to evok interest, which to Jacoba, who has been less fortunate in hi training, would smell of the bottomless pit. A simpler illus tration still: Tommy will work best with his hands on th table, while Polly—a rarer case to be sure—faces her difficult

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[1] From a paper read before the South African Association for t Advancement of Science at Easter, 1904, by Mr. P. A. Barnett, M. Superintendent of Education in Natal.

more easily with hands locked behind her; Jacobus likes his fat legs apart, while Jacoba loses nothing in mental concentration by being made to keep her heels together. The practical moral for teachers is to enforce a pose on little children only rarely; and then only for a very short spell, in order to drill or "pull them together." There is no unholier sight in earth, heaven, or education than a large class of little children kept quiet as stones for more than five minutes. *Mute*, you may make them, mute as mice, for a longer period; but it is easy to prolong the silence until it becomes unnerving and unhealthy. Children's chattering is not always mere ebullience. It is positively a necessary physical exercise, and is properly regulated in them by encouraging their intelligent questions and by giving them plenty of singing. In an excellent school for older girls which I once visited officially I found that five minutes of every sixty were given to promiscuous conversation; a very sensible way of letting off steam.

We have been accustomed, I fear, to test order too often by silence and by uniformity of pose. Such silence and such uniformity are useful, as other externally imposed constraint is useful, by way of drill; but mental, and, it may be added, moral activity in classes as in individuals implies much more variety of *muscular* expression than the over-anxious teacher is prepared to admit.

I noticed once a pitiful case of conscientious stupidity on the part of a teacher. Some seven-year-olds were having an "object lesson" on a pear; and the hands of one little lass stole up and sketched the pear that was being exhibited. She was pounced upon, told that she was a naughty girl, and the sketch consigned with ignominy to the fire, in order that all traces of a crime might be obliterated. The instinct of the child was right, and the energetic protest of the teacher was wrong. Provision should have been made for sketching the pear, as an integral part of the lesson. An intellectual or moral operation in young children, if in no other class of people, is clinched only by physical expression.

It all comes in the end to this: that we must use machinery in such a way that, without complicating and confusing class routine, every child may enjoy the freedom needed for him to express what is in him. The unintelligent use of the orthodox kindergarten exercises may easily end in mechanical and babyish waste of time; and especially foolish is the withholding of such instruction in the simple ancillary arts, reading and drawing and writing, as enable even a very young child to "amuse itself," as we say, without our self-satisfied interference or mental "strain."

The best thing, indeed, that we can teach children is this *how to amuse themselves*; and we cannot do it if we either laboriously and over-anxiously close to them the easy avenues of self-amusement, or painfully formalise their play and keep them perpetually under intrusive governance. A large part of the work of the teacher of little children should consist in watching them do what they like and see what they like without getting into one another's way. Yet we rarely come across an infant school in which the children are allowed, even as an occasional treat, to walk at their will about the schoolroom and to pore over the pictures on the walls. As a rule, indeed, the pictures in infant schools are hung far above the sight-line of even the gigantic teachers, and for all the good they do to the children might be in the lumber room. To have the pictures down once a year for the purpose of giving "lessons" on them makes things worse by formalising and desiccating all its associations.

Perhaps, however, the thing hardest to show to the amateur critic of education is the true nature of discipline. You may call your procedure either bringing-up, or teaching, or discipline; but you teach a child whether you will or no, and you can make profit out of his teachableness from the cradle.

The meaning of "No" can be understood by a baby a month old; and the youngest child can profit by the cultivation of regular habits. *Desultoriness* in the treatment of children is a deplorable cruelty. It does not promote health, originality, or freedom of development, as lazy and ill-informed people think, or affect to think; it merely binds the children in chains ultimately unbreakable, forged by their own uncombated moods and recurrent whimsies. It is a platitude, I know, to iterate that we have to teach children to govern themselves; but it must be repeated until it is believed and understood — on the one hand by the people who think that *any* constraint is bad, and on the other by those who have no other conception of education than as constraint invariably imposed from outside.

I was told to be practical, so I will be practical at the expense of being accused of carrying coals to Newcastle.

A child should be taught to control emotion first of all by controlling the *expression* of emotion; the unchecked physical expression of emotion, by reaction, increases the emotion itself. If a child cries, we have to stop its crying; not by shaking it, to relieve our own nerves; not by hitting an offending object, to relieve the child's nerves; but first by diverting its attention and even evoking its sympathy with the original cause of the emotion; and ultimately, when it can reason, by convincing it that it *can* stop if it will. All class teachers know that every now and then emotional waves sweep over a mass of little children from which they can be saved only by counter-emotion. A whole class may be unaccountably "naughty"; there is nothing for it but to rivet their attention on something new; objurgation is worse than useless.

To allow children to strike anyone in fun, even a father, or mother, or Kaffir nurse, is a form of cruelty *to the children* for which I have no adjective at command. The blow is a physical expression of malevolent emotion which should never be allowed room for exercise. The emotion grows by what it feeds upon; and, even if respect for the child's elders is restored, the instinct to hit out nervously in an emotional crisis remains. When you see in this country the too frequent and often gross incivility of young people, and of some old ones too, to their coloured dependents, the origin of the odious fault is not far to seek. The restriction of opportunity for this kind of explosion is one of the benefits of teaching young children in classes.

Cheerfulness and good humour should be fostered deliberately. No whining should be allowed; not only because a "wittering" person is useless to heaven and earth, but because the result of uncorrected whining is an unlovely egotism. It is quite easy to train the merest articulate babe to say *Ta* cheerfully; when it grows up, to make it respect scrupulously other children's toys; and, as early as you like, to teach it to protect others. Your little boy is not playing a baby game when he walks in front of you "for fear there may be robbers;" he is putting on his uniform. And so is your little maid when she "mothers" a girl still smaller.

Rudeness or pertness should be tolerated at no period of a child's life. Some people laugh at rudeness shown by a child of two, when in a child of ten it would disgust them: but there is no fixed point between two and ten at which your child naturally passes from original incivility to original politeness. A child who is never allowed to be rude to other people does not therefore feel restrained in their presence; whereas, if a child is permitted to be uncivil or unkindly to parents, nurses, brothers, sisters, or servants, it certainly cannot feel at home with people who are unfamiliar with what has become its "natural manner." A good many people suffer from the lack

of this discipline all through their ungainly lives; their roughness and inconsiderateness to folk who share their roof is a cause of immense unhappiness—and yet a little early training might have given their whole environment a different complexion. Rudeness is not really more natural to a little child, nor to anyone else, than kindness; but it may easily be made to flourish like a bay tree by foolish applause. Here, again, the class teacher has an opportunity; rudeness or pertness is an obvious public offence, and public feeling can at once be enlisted against it.

The most serious crime that any human being can commit is to kill happiness: and your children can be taught this, and should be taught it, in the interests of themselves as well as of others. If a child for a moment forgets itself, "Why," you ask, "did you say that? You could never have meant to make A. or B. unhappy?" "One person," says Stevenson, "I have to make good—myself. My duty to my neighbour is to make him happy—if I may." Surely gaiety and urbanity should be cultivated as a duty to one's fellows. No teacher should use sarcasm as a weapon of discipline, and least of all the teacher of little children.

Here, *per contra*, is a true story which should make your flesh creep. A mother received a complaint from her little girl of five that other children would not play with her. What should the mother have done? I suggest that she should have asked *Why*. If she had, she would have found material in the case for a lesson to an only child on the duty of "getting on" with other children by the exercise of unselfishness, and by not demanding all the best parts in games or in anything else. But this is what she actually said: "Never mind, darling. Come and I will read to you. Presently when they *want* to play with you, you can say 'No . . . won't.'" Could the woman have contrived a more certain device for securing the future misery of that wretched child?

In the handling of young children, if the example and cultivation of kindness comes first, the cultivation of honesty comes next.

By honesty I by no means intend you to understand mere truthfulness; I include frankness also, and the scrupulous respect for other people's rights even when the other people are not at hand to enforce them; at which point honesty and kindness mingle their streams.

There are very many children who fib lightly just in order to be interesting. Such cases should not be handled harshly, even before a class. It should be sufficient to appeal to the ever-operative ideal of little ones, the desire to be grown up. The baby, you point out, is not a witness whose help is worth much, since it cannot speak; tiny children can speak, but cannot be relied upon for great accuracy. Trustworthy speech, on the other hand, is the mark of the grown-up, and it is the best proof of grown-up-ness when speech can be credited, when people can depend and act upon it. It is a disgrace, you must urge, for a child who *can* behave as a good grown-up behaves to prefer to be untrustworthy.

And so far from the narration of fictions being an incentive to lying, it is just one of the best means of prevention. If you encourage in small children the conscious making-up of tales, you provide them with a touchstone, a contrast, by which they can compare fact and unfact. A child who lacks imagination is much more likely to lie deliberately, if awkwardly, than a child who can discriminate between reality and make-believe, and who, when engaged in make-believe, fabricates generously, openly, joyously. You should teach your children, however, not to blend fact with fiction. The blending of fact with fiction "with intent to deceive" is the only real lying. A habit of untruthfulness is so much an intellectual defect that the infliction of a positive penalty is more likely to do harm than good. Displeasure, unconcealed sorrow, the threatened loss of confidence—these alone are likely to cure it. But only in the very last resort should confidence actually be withdrawn; you must think many times before you remove the golden bridge, self-respect, by which your wanderer will most surely come home again. And public disgrace should be reserved for very critical cases that admit no other effectual alternative.

I might prolong these remarks indefinitely, but the time allotted to me has all but gone, and I have done enough, I think, to prove what seem to me the most important facts determinining the up-bringing of little children, and to illustrate what would seem to be the most profitable way of dealing with them. The mischief is not that the facts are unknown, but that they are not intelligently and unselfishly faced. The basis of all we do must be the manipulation of the child's physical constitution, the checking of bad physical habit and the development of good habit. We must make allowances for great variety of type, allow as much freedom as we can to individuals consistently with the maintenance of others' freedom; and we must provide children with the means and opportunity of cultivating their own powers by "amusing *themselves*." This is neither more nor less than to lead them by their own unconscious efforts to occupy themselves, rationally, of their own accord, in their own improvement.

And finally, in dealing with groups or classes of children, it should be remembered that the multitude of witnesses, the aggregation of so much individual self-consciousness, distends the scale of a teacher's operations, as a magnifying glass enlarges an object placed under it. The teacher's acts and bearing become gigantic and immensely impressive, seen on a big scale, never to be forgotten.

This is why, of all people in the world, the teacher of little children must be circumspect, judicious, urbane, firm, merciful.

THE NORMAL SCHOOLS OF THE UNITED STATES.

DURING the past decade the science of psychology has made remarkable progress both at home and in America. In the latter, however, it has entered on an experimental stage which has no parallel in this country, and a well-equipped psychological laboratory is now an essential adjunct of every important pedagogical school. These psychological departments, while chiefly engaged in "the various forms of investigation which are grouped under the heading of child study," regard the whole field of education as their province, and pursue systematic inquiries into those vexed questions of curriculum, time-table, methods and classification, which with us are determined by individual caprice or by a central authority out of touch with actual conditions and needs. An excellent illustration of how much better these things are done in America is furnished by the report of the Departments of Psychology and Education of the University of Colorado on the "Scope and efficiency of the Normal Schools of the United States." This report, which has been prepared by Mr. Frank H. Clark, is one of the fullest and most exhaustive contributions that have yet been made to the study of this important subject. It is singularly opportune at the present time when our system for the training of teachers is undergoing considerable modifications, and when local educational authorities

are considering the institution of additional training colleges for teachers. As the report is a *précis* of the best literature on the subject, and a summary and analysis of a great store of material collated at first hand for the report, it is impossible within the scope of this article to do justice to its many admirable features. All that can be done is to indicate the general trend of the evidence, and to give the conclusions arrived at.

The paper opens with a short sketch of the genesis and history of Normal Schools in America, which seem to have gone through all the vicissitudes experienced by those of our own country. Due acknowledgment is made of the admirable report on the same subject by a committee of the National Educational Association in 1899. The present report is in no sense to be regarded as a rival to it, but rather as an essential complement of it. The method of investigation pursued comprised:

(*a*) The consultation of the ample literature bearing on the subject, of which a formidable bibliography is given in the introduction.

(*b*) The analysis and digesting of the replies to sets of questions issued to normal-school presidents, normal-school graduates, and directors and inspectors of education.

These lists of questions, while not absolutely identical, were along similar and related lines, and a consideration of these and their respective answers will best indicate the nature and scope of the report.

(1) Is the present normal-school graduate a satisfactory product?

A considerable majority of inspectors and graduates, and a minority of the presidents, consider the product unsatisfactory. In attempting to locate the fault for whatever of unsatisfactory product is turned out, about one-third consider the blame to rest wholly or in part on the system itself.

The larger proportion, however, approximately agree that the great trouble lies: First, in the lack of adequate academic training of those who seek admission to the normal school; and second, in the fact that the faculties are too frequently composed, either in whole or in part, of those who are themselves lacking either: (*a*) Good academic foundation and scholarship sufficient to become competent leaders and trainers of those who are to become leaders and trainers of others; or (*b*) in that breadth of view and grasp of the entire scope of their work which is necessary to a presentation of the different divisions with due regard to the relative importance they bear to each other.

A number of the normal-school presidents admit this lack of qualifications on the part of their staff, and plead in mitigation the insufficiency of funds to attract good men. While this plea is admittedly correct, the colleges are blamed for attempting to do too much work. "The range of subjects offered in one normal course is sometimes simply astonishing. As a result, the limited time permitted to one subject is wholly inadequate, and the conditions of mind of a student completing (?) the course must be one bordering on chaos" While failure on the academic side is charged against some of the staff, failure on the practical side is brought against others.

"Learning alone is insufficient. It is Locke that once said, 'Men may be greatly learned but little knowing;' and Dickens, after giving a long enumeration of one of his schoolmaster's requirements, remarks, 'Ah, rather overdone, Mr. Choakumchild. If he had only learnt a little less, how infinitely better he might have taught much more.' Pedagogical research, psychological investigation, the study of methodology, without ample practical work in the art of teaching, can never constitute a man a teacher of teachers. We believe in scientifically-equipped instructors, but practical experience is an absolute essential."

(2) Should the greater emphasis be laid on *professional* or on *academic* studies in the normal-school course?

To teach how to teach is the supreme purpose of the normal school. But to do this effectively there must be a foundation on which to base this training. The normal schools find it an imperative necessity to do this foundation work, but even this may be done in a thoroughly professional way. If the study of the academic branches from this point of view is admitted to be a professional study, then the majority of those replying to this question will agree that the professional work is the only true and proper work of the normal, and the question of "which?" cannot be raised. Many local conditions force a modification of our ideal, but the true normal school is essentially professional.

(3) Is too much stress laid on methods in the normal schools?

Here, again, it is necessary to define our terms. "Method" as here used does not refer to those broad underlying principles which are common to all subjects and true for all time. By method in this question is meant those plans and devices which every successful teacher has found by experience effective in the presentation of various subjects to the pupil's mind. There is no sacredness about them, no universality. They may be as great a failure with one teacher as a success with another. There is very general agreement in all the replies that too much stress has been laid upon these so-called methods.

"The criticism which condems methodology is directed against the all-too-common practice which magnifies 'my method' and other devices unduly. Instances are not lacking in which young people of positive ability have been completely overwhelmed by the thousand and one petty devices and mannerisms of a 'professor of methods' in a normal school. Such tendency cannot be too strongly condemned. Failure to show the proper subordination of devices, however excellent, to the greater method is evidently a prolific evil in all too many normal schools."

(4) Should the standard of admission to training colleges be raised?

The major portion of those replying to this question are of opinion that a scholastic training equivalent to that afforded by the best of the higher-class schools should be demanded of all candidates for entrance to normal schools. But another and very positive opinion would demand a somewhat lower standard of admission as to scholarship. As this question is at present agitating the training college authorities in this country, it may be as well to present in full Mr. Clark's case for not raising the entrance test unduly.

"High-school graduates are too few to supply the demand for material out of which to develop teachers. It is all right to set the standard high and come to it if we can, but in the greater number of States such a standard is a simple impossibility. The State must and does authorise the certification of teachers on the basis of an examination covering but little more than the completion of the common branches in our rural schools. The State, therefore, cannot possibly deny to that same individual (who is thus given authority to teach) the privilege of admission and attendance upon a school which purposes to train him *how* to teach. To empower one to perform a function, and deny him the instruction as to how to perform it well is the rankest inconsistency."

TRAINING COLLEGES FOR SECONDARY-SCHOOL TEACHERS.

The value of training in the case of elementary teachers having been recognised for upwards of a century, it seems incredible that no systematic provision has yet been made for the practical training of secondary teachers. The United States has nothing to teach us in this respect, having been as fatally and fatuously negligent on this point as ourselves. They seem, however, to have at last awakened to the supreme folly of placing the critical years of adolescence at the mercy of the unskilled practitioner.

The pedagogical departments of the universities rather than the normal schools are looked to in order to provide the necessary training. The conditions of pedagogical study in the university are of the best, and the facilities there are much greater than elsewhere. Thus, of the 436 colleges and universities in the States, no fewer than 220 have courses and departments in pedagogy attached to them, so that the budding secondary-school teachers of America will soon have ready to hand schools of practical training with unequalled opportunities. "The profession of teaching needs the strength and dignity which university recognition, both on the academic and professional side, can give, and when this is given a higher appreciation of the work of teaching will be established in the public mind and conscience."

POINTS OF VIEW.

AN inspector should be a man who inspects sees correctly and reports with absolute truth. Do we get him? He is apt to become a director, a slave driver who imposes his own fads as to methods on the Headmaster, instead of leaving freedom to the Headmaster's own fads. He is human and cannot help forming personal likes and dislikes, and with the best intentions there is the tendency to soften down the terms of an adverse report. No man should be appointed an inspector without having had very considerable experience already as a schoolmaster. No school should be more than, say, two consecutive years under the same inspector. The school classification should be by examination conducted by the school staff, but the inspector should be obliged to assist at this by the pupils' answers being submitted to him after being dealt with by the staff. He should have the free run of the school at any time. Principal HICKS, F.R.S., at the Bradford Education Conference.

IN looking back I see that immense advances have been made even in the last fifty years in education and in girls' schools in England. I have seen the old universities double their members and more than double their curriculum, and I have seen the vast creation of younger universities in these quite recent years. I have seen in public schools the introduction of science from the very beginning, the introduction of English literature teaching from the very beginning, and the introduction of modern sides. In girls' schools you may say that the change is really a change from nothing or less than nothing to something substantial, hopeful, and progressive. A typical girls' school with which I had some acquaintance in my boyhood was officered by two excellent old ladies who would not themselves have claimed any qualification for their office. There was nothing that could be called real teaching. The English that they taught consisted in attempting to transform into schoolgirls' prose certain passages of Milton's "Paradise Lost," without any instructions as to the object to be sought, the method to be pursued, or the benefit to be gained. Of physical exercise there was nothing but a daily walk, and the rest of the time was wasted. We have since seen systematic education with proper methods adopted over the whole face of the country, and progress is not only not at an end but it is hardly even beginning. MR. ARTHUR SHERWICK at Ladybarn House School, Fallowfield, Manchester.

IT would, of course, be extravagant to maintain that all School Board teachers take the highest view of their responsibilities and opportunities. But it may safely be said that the tradition of the service is favourable to the humanising of the schools and the enlarging of the teacher's sphere of influence. It is the growth of this spirit among teachers which has been the chief means of making the schools the great social force they have undoubtedly become. There are districts in London, once the despair of social reformers and religious workers, where the planting of a Board School seems almost to have regenerated the neighbourhood, diminishing lawlessness, improving the appearance and manners of the children, changing the attitude of parents towards education from one of hostility to one of friendliness, and bringing decency and order into some of the most degraded homes.—Mr. HUGH B. PHILPOTT in "London at School." (Fisher Unwin.)

ASIDE from the admirable mnemonic exercise afforded by inflections and vocabulary, Latin grammar teaches observation and judgement. Latin style develops the artistic instinct, Latin literature reveals the nobler aspects of human nature. The functions of case, tense, and mood form an ample course in philosophy; there can be no better lesson in logic than the disentangling of a Latin period; classical art is the basis of our æsthetic ideals; Roman history is the world's fountain-head of patriotism; ancient literature has been for ages our chief text-book of psychology. How much of all this can a modern language impart? Not all, but a large share; and if it has never been done hitherto, the failure has been due, not to the subject, but to the teacher.—Prof. C. H. GRANDGENT in *School Review* (Chicago, U.S.A.), June, 1904.

THE girl of 12 who has been brought up with boys is, as compared with the girl brought up among girls, more self-reliant, more natural and more able to take care of herself, more straightforward, less silly, more ready to take the initiative, and she does her work in a broader spirit, with greater independence, she takes her work more lightly and happily, and, above all, I believe she is more contented with her lot in life. Little girls are often almost as keenly active as boys; and when they are kept apart, and share, perhaps, only a few of the milder plays and the kind of entertainments given at children's parties, time is wasted and tears are shed in secret, in the longing desire to have been born that happy, free, active being—a boy. The child does not realise that it is not really boyhood for which she yearns so much as freedom—freedom to give full vent to her activity, and boy companionship is one of the greatest helps she can get.—Miss A. WOODS, at the Bradford Education Conference.

HISTORY AND CURRENT EVENTS.

OUR friends of the United States of America are holding a great exhibition (or, as they prefer to call it, exposition) this year, to celebrate the acquisition a hundred years ago of that part of their territory which lies to the west of the Mississippi. Louisiana, as a European colony, was the work of 17th century France, feeling her way southwards from then French Canada. When, in 1763, Great Britain acquired Canada, France gave Louisiana, in all its unknown extent and possibilities, to her ally, Spain, to compensate her for ceding Florida to Great Britain. In 1800 Napoleon made Spain restore this territory to France along with the duchy of Parma, in return for the "Kingdom of Etruria." He had probably some idea of extending French rule over America, as over India, at the cost of Great Britain. But in 1803, on the renewal of war with his island-enemy, he sold Louisiana to the United States of America, partly to end certain petty disputes, partly because he feared the naval strength of Britain, and partly to raise money for the war. What the United States paid for it in cash and in later wars with Mexico may be read in the text books.

POLITICIANS in general were disappointed that, at Kiel, nothing was publicly said which would help towards forecasting the mutual behaviour of Germany and Great Britain. But one phrase of the German Emperor's may interest us as students and teachers. Modern theories of "sea-power" have reached the highest quarters, and King Edward was described by his cousin-host as "the ruler of a great Empire, which by virtue of the sea encircles the world." We take it that this sentence leans that the boundaries of a sea-power (and Great Britain-d-Ireland-and-British-Dominions-beyond-the-Seas is surely a -power) are the coasts of its potential enemies, that, *e.g.*, ing our long contest with Napoleon, while he was supreme land till the Spanish-Portuguese rising in 1808, our inions touched his domains wherever these met "blue-er." But if so, every claimant to sea-power must necessarily rival to every other such claimant. This idea used to be essed in titles, such as Edward III's "Roi de la Mier," though these have gone out of date, the claims are still as as ever.

HERE has been some talk this Parliamentary session of a further to modify the Act of Settlement. We do not refer e changes which Roman Catholics desire in the terms of Coronation Oath, but to the proposal that members of the se of Commons shall cease to vacate their seats when oting office under the Crown. The custom has long been st meaningless, and generally involves merely an incon-nce in public business. It is a relic of the old theory that ament met in order that the House of Commons might with the Ministers of the Crown, that for the Ministers to a following in the House was a defeat of that intention use it impaired the independence of the House, and that, efore, there should be a clear separation between "execu-" and "legislative." The history of Place Bills in Great ain, and of the constitutions of the United States and of olutionary France, will illustrate this controversy, now old-world-like so far as the British Government is cerned.

COUNT TOLSTOI'S recent manifesto on the Russo-Japanese r is, perhaps, unique of its kind. He claims to interpret the spel of Jesus Christ, and to apply it to the politics of the rld. Whether that interpretation is correct, and the applica-on true, will probably receive many answers. It would be a interesting inquiry to investigate the opinions of Christians t different ages of the world on the lawfulness of war, and, ndeed, on the bases of temporal governments, for the two questions are intimately allied. The early years of the fourth century would be found to be a dividing line. The Christian Churches of the first three centuries, un-established and often persecuted, had varying views on military service and their attitude in general towards the Emperor. After the era of Constantine we begin to trace the growth of the great Church-State of Europe, which combined the claims of God and of Cæsar. It was not till Europe was weary of the distractions into which the Reformation had thrown her that we find even toleration beginning to be practised.

IN general, all helps whereby historical objects may be represented to sense—portraits, pictures of buildings, of ruins, &c.—are desirable; maps for the more ancient times must be regarded as particularly indispensable. They should always be at hand, and their study should not be neglected . . . . . The lack of such aids causes the loss of much time and temper over mere memory work.—HERBART.

ITEMS OF INTEREST.

GENERAL.

IN another part of the present issue (p. 295) we publish an article on class-room arrangements by Mr. A. E. Munby, formerly senior science master of Felsted School. This contribution should be of special interest to our readers, written as it has been by an architect who has had a long experience of the actual conditions of school work. Mr. Munby has successfully applied the practical knowledge gained as a schoolmaster to the problems of school architecture, and his remarks should furnish headmasters with useful ideas.

IN recent examinations there has certainly been a tendency to increase the difficulty of the modern language papers. We welcome this in the main, as it will cause French and German to be taken more seriously as subjects in the school curriculum. But unless examiners are careful, they will defeat their own end. If the standard is not raised gradually, candidates will choose other subjects wherever French and German are optional. An example of this danger occurs in the French paper set at the June Matriculation of the University of London. The piece of prose set for translation into English was far above the standard of such an examination. It was an historical piece of considerable difficulty, needing the command of a fairly wide vocabulary. We fear that not a quarter of the candidates would gain 25 per cent. of full marks. It would be far better for examiners to recognise the weakness of the majority of candidates and set a short story that would enable them to distinguish better the capabilities of candidates. This story could increase in difficulty at each examination until a fit and proper standard had been reached. Then candidates would not take French as a subject in which they *could* not fail, and a due respect for modern languages would be engendered. On the other hand, we are glad to see a continuance of the questions involving answers in French of the nature of short essays.

THE French paper set for the Entrance Examination to Sandhurst and Woolwich on July 4th is, on the whole, more difficult than usual. The first piece of translation is a hard selection describing the Italian Tyrol; the second is an extract from Gil Blas. Both contain words that would test fully a candidate's vocabulary. On the whole the extracts are suitable, although a more warlike spirit might be attempted with such candidates. The *thème* returns to the bad old traditions of some years back—a piece of dialogue from a novel. Here again the examiners will obtain a vast quantity of candidates with low marks, whereas they would be able to distinguish between the moderate and the bad by setting an ordinary piece of description or of history. For weak candidates are always weakest in colloquial phrases. The grammar questions decrease in number and importance with each examination; this time we have fourteen feminines to give, five sentences to translate, and a short essay of ten or twelve lines on the question whether military service should be made compulsory in England. If candidates were wise, they would all answer in the affirmative, as in this way would they please best a foreign examiner.

THE Council of the Classical Association has appointed a committee to report on uniformity of spelling for Latin school-books. The four members appointed, with power to co-opt a fifth, are Prof. Postgate, Prof. Conway, Dr. Rouse, and Mr. S. E. Winbolt.

AN important deputation, mainly composed of members of the medical profession, waited on Lord Londonderry, President

of the Board of Education, at the offices of the Board in Whitehall on June 11th, on the subject of the teaching of hygiene in elementary and secondary schools. The deputation was organised in support of a petition prepared by a committee of medical men, which has been signed by 14,718 registered medical practitioners in the United Kingdom. The petition was discussed in an article in THE SCHOOL WORLD, March, 1904 (p. 96), and our readers are already familiar with its contents. Dr. Farquharson, M.P., as chairman of the Public Health Committee of members of the House of Commons, briefly introduced the deputation. He said that the 14,700 members of the medical profession who had signed the petition hoped that they might get some encouragement to believe that in the future better facilities might be provided both in elementary and secondary schools for the teaching of matters connected with hygiene and public health. Lord Londonderry, in reply, said he was anxious to see teachers carry out the ideas contained in the petition, but he was bound to tell them that at the present moment suitable teachers did not exist, and he should be the last to wish anybody to act as instructor in such important subjects as those who had not received instruction in them. They were at the present moment devoting themselves to the training of teachers and instructing them properly in the whole question of hygiene. He trusted that as time went on their efforts in that direction would bring about the desired results. The President proceeded to show that the Board of Education are very far from ignoring this important question, and hope to show that they realise their responsibility for contributing towards the production of a race that is strong in health, and physically as well as intellectually and morally competent.

THE report for the year ended December 31st, 1903, of the Teachers' Registration Council to the Secretary of the Board of Education has been issued. Dealing with the recognition of schools, the report gives statistics showing that the total number of schools submitted for recognition was, up to the date specified, 2,634; the total number of schools dealt with was—recognised, 1,495; not recognised, 459; total, 1,954, leaving a balance not dealt with of 680. The numbers submitted for recognition in 1903 were 1,887. As regards the Teachers' Register, the Council note with satisfaction that the number of applicants registered during 1903 reached the total of 4,045. They point out that this figure cannot in any way be regarded as covering even one-quarter of the number of head and assistant teachers who are qualified for registration. In their observations on the working of the regulations, the Council state that they desire to call the attention of the Board to the manner in which their work is hampered by the present arrangements with regard to finance. "It has been intimated to the Council that, in the opinion of the Treasury, the work of registration should be self-supporting, and all recommendations as regards expenditure have evidently been dealt with on that basis. In consequence, no establishment charges have been sanctioned for the initial expenses of the office, and the £500 loan from the Treasury made in 1902 has been repaid in 1903 out of income. A request to sanction the payment of fees to members of Council for attendance at meetings, estimated at a *maximum* total of £500 per annum and clearly contemplated under the Order, has been refused for lack of funds, and permission to print the Teachers' Register at an estimated initial cost of £3,000 and an annual revision at £1,000, although one of the main objects of registration, has been refused on the same ground. The result of these decisions must be to restrict the work which they have been appointed to perform."

THE Senate of the University of London have decided to *accept the munificent offer* of the Goldsmiths' Company to transfer to the University the Goldsmiths' Institu Cross. To meet the needs of the county councils Middlesex, Kent, and Surrey, and the borough cour don, it is proposed that a day training college fo students shall be opened in the Goldsmiths' Insti autumn of 1905. In connection with this college it i important that day classes should be held prepara intermediate examinations, or up to the standard mediate examinations, in arts and science. This absorb the funds at the disposal of the University thus be unable to carry on other classes unless it rec financial support. It will not be possible for the to continue the social and recreative side of the Inst scheme has received the full approval of the Company. The London County Council has pas lution informing the Goldsmiths' Company that would view with regret the closing of the Goldsr tute and the termination of its educational work technic, and inviting the Company to consider wh arrangement cannot be come to by which the work tute could be continued in its present polytechni second resolution states, among other points, that, of its proving impossible to secure the continu Goldsmiths' Institute as a polytechnic, the Co regard it as of great importance to secure its ret centre of evening instruction in as many subjects especially in the higher grades. We understand tha resolutions were passed the Goldsmiths' Company to find the funds necessary for the continuance of t work of the polytechnic.

ON the occasion of the conferment of the honora Doctor of Letters of the University of Manchest Prof. Findlay presented Dr. Rein to the Vice Chanc Findlay spoke of Dr. Rein as one who has lived a laborious life devoted to the study of education. has, he continued, placed pedagogy in Germany u basis of science and philosophy. Beyond this, he h his great gifts as a public speaker and writer, rend service to the cause of educational reform, and wi side those forces of public opinion which, on the in England, raise the fortunes of the school. As teacher he has placed the study of education upon able basis—that of experience among children in th school. His little Practising School in Jena w years conducted in a tiny house in a back street, but teachers from many lands have learned the princip a university seminar for education should be con have copied his example in their own work. In the Prof. Rein has been to some extent a disciple, anc would probably wish to be described as a follower who was the first to show the universities how education should study. Prof. Rein has given full to the unity of the work of education, embracing teachers, from the humblest village school to the His seminar admits of no water-tight compartme sympathies embrace the entire field of educationa He has recognised the place of women teachers in t the school, and has rendered them due honour to his power.

SIR ARTHUR RÜCKER, principal of the Universit in his recent address on university organisation in C which he delivered at the University College of N referred to the relation which should exist betwe cation authorities and local universities. He thi lation should be intimate, and that a constant ir

opinions between the authority and the university is desirable. Two of the methods by which the university can be of assistance to education committees are, Sir Arthur Rücker said, by inspecting schools and by carrying on certain kinds of educational work for them. But though the work of the university should be encouraged in every possible way by the committee, it is undesirable that the university should be governed in a parochial manner; it should look to the State rather than to local rates for the funds, which, as Sir Norman Lockyer has recently shown, are urgently needed if English universities are to be placed in the position they ought long ago to have reached.

IN accordance with the directions in section 2 of the Education Act, 1902, the Education Committee of the West Riding County Council has issued a report on the secondary schools and pupil-teacher centres in the West Riding. The Act provides that the local education authority shall consider the educational needs of its area, and take such steps as seem desirable, after consultation with the Board of Education, to supply or aid the supply of education other than elementary, and to promote the general co-ordination of all forms of education. It is further enacted that in exercising its powers under the Act a council shall have regard to the existing supply of efficient schools or colleges. The report shows that the importance of this preliminary survey has been fully recognised by the West Riding Committee, and, as in drawing up the report the director of education has been able to benefit by the guidance of Mr. Arthur H. D. Acland, who is the chairman of the committee, the report may be recommended with confidence to all concerned in educational administration. The object of the report is, Mr. Acland points out in an introductory note, to show the educational conditions of the West Riding at the end of the year 1902, so far as the secondary education of boys and girls in day schools between the elementary schools and the universities is concerned. It must be noted that since that date the grants made by the county authority to many of the secondary schools have been considerably increased.

As the prefatory note states, the non-county boroughs and urban district councils have powers of their own to the extent of an expenditure not exceeding a penny rate as regards secondary or higher education, and many of them have made good use of these powers. But it is becoming continually clearer that, without aid raised from the central county authority, secondary education in the non-county boroughs and district council areas can make little progress. At the present time about 4,300 pupils (2,800 boys, 1,500 girls) resident in the West Riding are attending public secondary schools in the riding or in the county boroughs. If there were an attendance of five per thousand, which is the very least that there should be, within a very few years in any large industrial districts there would be 7,000, or more than half as many again. If to this number be added, say, about 1,000 of the intending pupil teachers who will probably have to be trained in the riding, this would give the number of 8,000 who should be in attendance, or nearly twice as many as at present. After making allowance for filling up existing accommodation which is not filled up, which is within convenient reach of parents, there would probably remain a need for new schools to accommodate at least 2,500 pupils, of whom the great majority would be girls. There are, at present, only 1,000 girls resident in the West Riding attending public schools within the riding, and only 450 girls attending public schools in the county boroughs. If ten new girls' schools were placed in the proper places, where the need is greatest, it is probable that in a very short time there would be a very largely increased attendance of girls for whom at present no adequate provision is made.

WE have received a copy of the final arrangements for the second international congress for the development of the teaching of drawing, which, as has been already announced in these columns, will be held at Bern from August 2nd to 6th. There will be two sections concerned respectively with general and special instruction. In the former the following subjects will be discussed:—The educative *rôle* of drawing,—of the correlation of drawing with other branches of study; methods of teaching drawing in the kindergarten; methods of teaching drawing in primary schools (in the United States all grades below the high school); methods of teaching drawing in secondary schools (in the United States, schools above the grammar grade); drawing in higher education; and the training of teachers of drawing for the various grades. In the latter section the subjects will be:—Actual condition of special instruction in different countries (a report from each country with statistics and illustrations will be given with the final report); organisation of apprenticeships, and professional courses for apprentices and artisans of both sexes; teaching of drawing in industrial schools. Schools of industrial art; have they accomplished what was expected of them? the training of teachers of drawing for special instruction of various grades; and the international codification of signs and symbols used in drawing.

THE Governors of the Merchant Venturers' Technical College, Bristol, have published, in connection with the opening of new laboratories and workshops, an illustrated souvenir. The nicely-produced brochure contains a short history of the College and an interesting account of the recently-erected buildings. Attention is directed to the fact that the quality of the education given in the College has improved even to a greater extent than the growth in numbers indicates. In 1890 the preparatory school was the largest day department of the College, while it is now the smallest, and is only one-third as large as it was fourteen years ago. This is the natural result of the improvement in the elementary education given in the public elementary schools of Bristol. On the other hand, the secondary school is nearly twice as large as it was in 1890, notwithstanding reductions which have been brought about recently by the provision of free, or nearly free, secondary education at the cost of the ratepayers. It is noteworthy also that the number of adult students attending the day classes has increased fivefold since 1890.

WE have received from the Director of the Transvaal Education Department a copy of the report for the school year, January to December, 1903. There were during the year 1903 several important changes in the head educational office at Pretoria. In July of that year Mr. Sargant, the director of education for the Transvaal and Orange River Colony, was appointed educational adviser to Lord Milner, and, in consequence, Mr. Fabian Ware was appointed director of education for the Transvaal. Referring to the work of secondary schools, the report states that the regulations in regard to secondary schools embody several important principles. No attempt is made to lay down rigid courses of study as in the case of primary schools. Indeed, the regulations directly affect only the three highest forms. Their aim is rather to set a common standard for secondary education in the colony without imposing any rigid uniformity and without interfering with the variety in individual development which is one of the chief features of the British secondary school system. The existing standard of secondary education in South Africa is that set by the matriculation examination of the Cape of Good Hope University. That this standard is lower than the practical needs of the colony demand becomes evident from a consideration of the immediate requirements in the Transvaal with regard to higher technical education in its relation to the mining industry. For

while the matriculation examination, which admits to the existing South African mining course, may be passed by a South African boy of average ability at the age of sixteen or seventeen, the German or American boy with whom he has to compete for the leading positions in the mining industry cannot qualify for admission to the German or American course before the age of eighteen or nineteen. The department has hitherto provided the means for secondary education by establishing and maintaining fee-paying secondary schools in the chief provincial centres, and high schools in Pretoria and Johannesburg. The latter are administered directly from the Head Office, while the former, with the exception of the schools at Heidelberg and Standerton, are each under the control of the district inspector. Teachers at home who desire to acquaint themselves with the precise educational conditions in the Transvaal should endeavour to obtain the opportunity of studying this report.

WE have received from Mr. John Murray a copy of the first bound volume of our new contemporary, *School*. The six issues of the periodical which have now appeared make in their bright green covers a handsome volume. The articles are devoted chiefly to subjects of theoretical interest, and general educational principles may be said to be given greater prominence than practical class-room methods. Each separate number contains a portrait of some great authority in education, and these pictures add much to the interest of the volume. It is irritating to the reader to find advertisements and articles mixed together indiscriminately.

WE learn from *The Times* that the Vienna Industrial School Commission will open in September next an exhibition of industrial school work. The Government industrial schools in Vienna will join in the enterprise. To show the results of the instruction given to apprentices in their masters' shops, an exhibition of their work will be held from September 21st to 24th. From September 24th to 30th there will be similar exhibits from the provinces. The exhibition committee intends to bestow honorary diplomas on tradesmen whose apprentices have shown an exceptional degree of technical ability.

DR. W. L. MACKENZIE, the medical inspector to the Local Government Board for Scotland, contributes to the July number of the *Parents' Review* an interesting article on "Normal Growth in the School Ages." The essay deserves to be read by all teachers, who will find in it numerous practical hints on how to promote healthy conditions during school work. Some excellent tables are provided to show how height and weight may be employed scientifically as evidence of growth. The paper may be described as a concise summary of the least that teachers and parents should know about the science of such subjects as growth, diet, sleep, and exercise.

THE Guide to the seaside resorts and places of interest in Normandy and Brittany, published by the London and South-Western Railway Company, should be seen by all who contemplate spending any part of the summer vacation in these picturesque parts of France. The information is concise, and is well arranged, so that the cost of a tour and the character of various places where a pleasant holiday may be spent can be easily found.

SCOTTISH.

THE Committee Stage of the Education Bill brought out, as anticipated in these columns, much greater divergence of opinion than was generally looked for after the smooth passage of the first and second reading. Mr. Balfour hoped that the three days he had allowed for this stage would see the Bill safely through. As a matter of fact, only half the Bill has been considered, and the most contentious clauses—those dealing with rate aid to v untary schools and with the powers of the department—h still to be discussed. Over 300 amendments and new clau occupying six pages of "the orders of the day" have been on the notice paper, and with the end of the Session so close hand, the prospects of the Bill must be regarded as extrem doubtful unless some compromise is made. A Round T Conference of Scottish Representatives has been suggested, there are good hopes that such a meeting will take place dispose of the great majority of amendments by mutual agr ment.

SEVERAL important and valuable amendments to the Edu tion Bill have been made during the first part of the committ stage, and all these have been in the direction suggested by t various associations of teachers. The most important chang may be summed up as follows:—(1) While the unit for t educational area is still to be the "county district," provisi is made for dividing up such "district," or for combining t or more districts, where educational or geographical consider tions make this desirable; (2) the deficiency in the school fu is to be met by means of a uniform "district" rate, instead a parish rate as originally proposed; (3) the appointment managers is to be optional in the case of the large cities, a compulsory for all other education districts. The appointm of such managers is to remain in the hands of the educati authorities; (4) the provision of recreation fields and pl grounds has been included among the objects for which capi expenditure may be incurred.

A REPORT by Mr. George Andrew, one of His Majesty's I spectors of Schools in Scotland, on the Gemeindeschuler Berlin and Charlottenburg, has just been issued as a blue-bo The report embodies the results of visits paid to the schools question during the autumn of 1902-1903. It aims generally giving some account of the state of elementary education in th two communities, and directs attention to the more recent velopments. The report is of special value, as the educatio facts and methods discussed are continually regarded in the lig of those existing in the urban schools of this country. Of speci interest to teachers are those parts of the report which deal wi the status and emoluments of the German teachers. After a mini mum service of ten years the teacher is entitled to 15-60ths his salary at the date of retirement, 1-60th being added for eac year's service after ten. There is no compulsory age limit fo retiring. While the salaries are on the whole smaller than those of teachers in this country, the different value of money in the two countries has to be kept in mind. One certainly gets the impression from this report that the teacher in Germany, who is a civil servant, with a fair pension on retiral, and provision for wife and children on his death, is on a much more satisfac tory basis than in England or Scotland.

A VOCABULARY of Scottish words which are purely French, both in pronunciation and meaning, was recently contributed by Mrs. Sinclair to the "Transactions" of the Franco-Scottish Society. At the suggestion of several members it has now been enlarged by the author with the assistance of Prof. Kirkpatrick and Sir Andrew Mure, and will shortly be published under the title of "The Thistle and Fleur de Lys." A historical introduction traces the long intercourse with France which left so marked an influence on the Scottish language.

THE papers set at the recent examinations for leaving certificates were on the whole decidedly satisfactory. Exception must be made, however, of the higher grade papers in arithmetic and mathematics, which were far too theoretical in character, and quite beyond the capacity of the great majority of the pupils. In the English paper of the lower grade, one o

the subjects set for an essay was "The life of a rat on board ship." All sympathy must be extended to the examiner who seeks to avoid the beaten track in his selection of subjects, but surely some less gruesome choice might have been made without loss of originality. It would be interesting to learn the extraordinary train of thought which suggested to the examiner this preposterous subject. A *caveat* must also be entered against the tendency to draw up the papers of the higher and lower grade in English on similar and, in many cases, identical lines. This year the whole of the geography and history papers, and at least one of the grammar questions, were the same for the two stages. This saves trouble to an examiner, but has no other merit, as it is bound to be unfair to one or other of the grades of candidates—too easy for the one or too difficult for the other.

IRISH.

THE Technical Education Congress met this year in Dublin, and devoted most of its time to the question as to how primary and technical schools could be brought into closer co-operation. It was pointed out that the work of Technical Instruction Committees was very seriously hampered, and to a considerable extent rendered unpopular, by the present complete separation of the evening schools of the National Board from the evening technical schools, and an appeal was made to the Department of Technical Instruction to attempt to secure a modification of the existing arrangements so that this difficulty might be removed. Resolutions were also adopted urging educational authorities to establish technical scholarships for promising pupils from primary schools, and calling attention to the teaching of domestic science in girls' schools. Stress was also laid upon the undue proportion of revenue spent on administration. The Department spends altogether £200,000, and to administer this costs £47,500. The Commissioners of National Education in Ireland administer £1,393,000 at a cost of £75,000, and the Commissioners of Scottish Education £1,750,000 at a cost of £60,000. It should, however, be remembered that the Department is young and is not yet fully developed, and that not only is initial expenditure always large, but the cost of administration is usually in inverse proportion to the total amount spent. This latter observation is a further argument in favour of the co-ordination of education under one central authority.

THE Catholic hierarchy of Ireland, in their annual meeting at Maynooth, have declared decisively against a Government department and for the maintenance of the present system, or, we should rather say, systems. How the present extravagant cost of administration is to be reduced, or how, what is more important, co-ordination with a proper educational ladder is to be introduced without some radical change, we are at a loss to see. As the report of the meeting is somewhat long, we must content ourselves with a summary. First, on religious grounds it is said to be imperative to resist any limitation or restriction of the control now exercised by managers over National schools, or any interference with the appointment of teachers in those schools under the present managerial system. The defects of the present system may be remedied without any radical change "if the appointment of Commissioners is carefully made, and on educational qualifications." Secondly, the equivalent grant should be given to primary schools and the £30,000 a year should cease to be spent on model schools. Training colleges should be made more efficient and salaries of teachers should be adequately increased. Thirdly, it is denied that the people show a want of interest in education. It is then stated that the alternative to the present Board of National Education would be a Government department, which would be objectionable "on religious, political and educational grounds," and would only afford a "further opportunity of practical ascendancy for a favoured sect." The bishops are satisfied that the new-found zeal for educational reform has for its purpose the "elimination from the schools of the religious influence of the Church." They are also well content with the present Intermediate Board. The talk about co-ordination is absurd until Catholics have a Catholic University. Until such a university is established "we shall regard all this talk about co-ordination as insincere, and as aimed at lessening clerical—that is, Catholic—influence in the schools rather than at promoting their educational efficiency."

ANOTHER side of Catholic opinion is represented by the *Daily Independent*, which speaks of "the disorganised and scandalously incomplete system of education at present existing in this country." No reform of primary education will be satisfactory, owing to the absence of anything in the nature of a really extensive system of secondary education. This maims primary education, stunts its curriculum, and causes an absence of supply of satisfactory primary teachers. "Co-ordination is urgently called for, on a scale at least equal to that which prevails across the Channel." Children of poor parents must have the opportunity of a secondary education, and for this "it is absolutely essential that effort be made to establish in our midst institutions somewhat similar to the grammar schools of England." "We may yet witness the formation of a denominational coalition for common ends."

THE General Assembly of the Presbyterian Church also discussed in Dublin last month the problem of secondary education. It was pointed out that Government funds for secondary education had been going almost wholly to the establishment and better equipment of purely denominational schools, and that Nonconformists, except in the larger towns, were compelled to educate their children in an unfavourable denominational atmosphere. The remedy seemed to lie in the establishment in different parts of the country of State schools which should not be sectarian or under direct clerical control.

MR. R. BLAIR, Assistant Secretary for Technical Instruction under the Department of Agriculture and Technical Instruction, has been appointed Executive Officer for Education under the London County Council, in connection with the new Education Act. Mr. Blair has proved himself most zealous, energetic and efficient in establishing science instruction and laboratories in Irish Intermediate schools. His place will be taken by Mr. Geo. Fletcher, the Senior Inspector of the Department.

WELSH.

THE Medical Officer to the Glamorganshire County Council has made a report to the Education Committee on the important question of the sanitary and medical control of schools. In it he says: "School buildings should not only be not objectionable, but serve as a model of sanitary excellence, for the unconscious lessons which children learn from their surroundings are many and lasting. Apart from the initial defects in construction, many schools are rendered unhealthy by overcrowding, over or under heating, inefficient ventilation, inefficient and unsuitable cleansing, unsatisfactory furniture, and imperfect lighting. One often finds the windows unopened during the night and in the intervals during school hours, thus not making the proper use of the means provided for ventilation."

TWO recommendations of Dr. Williams' are: (1) Inspection, (2) Instruction. An initial inspection is not sufficient. There should be periodical inspection. This should include: (1) an enquiry into records of sickness; (2) the general hygienic ad-

ministration of schools; (3) the taking of samples of water, air, dust, etc., for examination at the county laboratory, and (4) the testing of drains, especially in coal-mining districts, where subsidences are common. In individual children steps should be taken with regard to those showing signs of defective eyesight and hearing, affections of the throat, spinal diseases, etc., which unless recognised and tended in time, unfit the child to benefit from teaching and may cause partial or total disablement for life. Marked anæmia, choreic movements, curvatures, cough, etc., all call for immediate attention."

As to instruction, Dr Williams suggests that the teaching of hygiene should be made interesting by diagrams and models. "The most important points in physiology are cleanliness, importance of pure air, the care and cleanliness of the teeth, structure of the various parts of the body, especially the heart, and circulation, elements of nutrition and digestion. In hygiene proper, air and ventilation require most attention, and should be illustrated by taking the school buildings as an object lesson; importance of pure water, and likely means of filtration, sanitary appliances and their maintenance, using school fittings as illustrations, elementary ideas of the nature of infection, and importance of preventing its spread, what vaccination has achieved, some idea of consumption, and the possible danger from spitting."

THE motion of the Glamorganshire Education Committee to exclude children under five years of age from attendance at school has been rescinded. The Clerk pointed out that the Education Committee were bound under the Education Act to provide such accommodation as the Board of Education thought fit, and stated that the Committee were thus obliged to provide the accommodation for children under five. One of the members, however, protested, saying: "If babies are to be provided for, let an Act of Parliament be passed to provide nurses. Children of such tender years are only a hindrance to education."

THE Executive Committee of the Cardiff Welsh Sunday School Union have been discussing the teaching of Welsh in the elementary, higher grade, and intermediate schools of Wales. It was felt to be unfair that Welsh should have to be taught on Sunday, whilst rates had to be paid for the maintenance of elementary schools. It was resolved: "That this Committee, representing over 2,000 scholars, respectfully asks the Education Authority of the borough of Cardiff to make the teaching of Welsh compulsory in all the elementary schools." Parents were advised to demand that their children should be taught Welsh in the higher-grade school, and that pupil teachers should be expected to take Welsh as a subject in the King's Scholarship examination.

IN connection with the appointment of officials in the Pembrokeshire Education Committee, at a recent meeting of the Committee it was stated that the county had only 53 schools, and it was urged that £250 per annum for a Director of Education, and £200 for an accountant would be excessive salaries. A committee was appointed to consider the salaries and duties.

THE Education (Transferred Schools) Bill, moved by the Bishop of St. Asaph, has passed the second reading in the House of Lords. The purpose of the Bill is to enable local education authorities to make better arrangements with reference to the transfer of public elementary schools, and to provide that religious teaching which is not distinctive of any particular denomination shall be given in the transferred schools during certain specified school hours; and further, that facilities be afforded for the giving of denominational religious instruction to the children of such parents as shall desire it, *during* school hours, but not at the cost of the local education *authority.*

COMMON EXAMINATION FOR ENTRANCE TO PUBLIC SCHOOL

PAPERS SET IN 1904.

MOST important revolutions are silent ones, and we that greater results in the co-ordination of education will from the common entrance examinations to our great sc than from other changes that have been more exten boomed. The movement, we believe, started with the masters of preparatory schools, who found it exceedingly cult to prepare their boys for the very different examina held by the chief schools. As an example of the cu methods of some of these, it will hardly be believed pe that at one important public school there was two years a French paper for a boy who wished to enter the modern He was examined in Latin, and asked what work he had in German and Science, but all his work at French was us so far as his entrance to that school was concerned. under a board of management, which includes Canon Bell, Mansfield and Mr. Ritchie, the same examination will a boys to nearly all the chief schools; and we have little d that the others will soon fall into line. Thus the work o preparatory schoolmaster will be made easier and more cient, because he will not have to fear the eccentricities of vidual masters. We are able to print below all the pape at the first common entrance examination on June 28th 29th, with the exception of those in Greek and German.

JUNE 28TH.

Latin.—(*Two hours.*)

(*Each Section, i.e., Grammar, Prose and Translation, collected at the expiration of the allotted time.*)

LATIN GRAMMAR.—(*Time, thirty minutes.*)

(1) Ablative sing. and gen. plur. of:—senex, frater, manus, res, mare, ingens, similis, dives, domus.

(2) Compare:—utilis, parvus, juvenis, dubius, diu, acrit

(3) Give the masculine endings of nouns of the third d sion. Give an example and an exception in each instance

(4) Latin for: each / no one / neither — spoke. — Let no one speak. / Which consul spoke / Which Muse sang?

(5) Latin for:—40,200; sixth, tenth; 3,000 ships.

(6) Give 1st sing. and 3rd plur. of fut. ind. of eo and fe imp. conj. of patior and nolo; and of perf. ind. of mal feror.

(7) Give pres. inf., perf. indic. (1st sing.), supine, English of:—verto, jaceo, video, audeo, gero, fodio.

(8) Translate, word by word:—Sperat urbem captum i

(9) Give the various meanings "nostrum" and "sui have.

(10) Give the 1st sing. pres. ind. and the meaning natus, questus, nactus, ratus, fatus, orsus.

(11) Give all the participles of "morior" and "nubo," their meanings.

LATIN PROSE.—(*Time, forty-five minutes.*)

(*Do as much of the following as you can in the order giv*

A.

Turn into Latin:—

(1) The place which he had chosen for the cam not far from the town.

(2) The messenger announced that the ship had been

(3) This man was considered (*puto*) the wisest c citizens.

(4) The town of Carioli was taken by the Rom a stratagem (*dolus*).

(5) So strong was the wind that all the old trees blown down (*subverto*).

(6) To please her father she married a man who laughing-stock (*ludibrium*) to all.

(7) I pity you for having lent (*credo*) him so large a su

(8) I fear he will not come, for the snow is six feet de

(9) You will have to endure (*patior*) many priva (*aerumna*, f.).

B.

Turn into Latin :—

After the capture of Saguntum, Hannibal set out from Spain with a large army to attack the Romans in Italy. He had most serious difficulties to overcome in crossing the Alps (*Alps*), but at length he succeeded. On reaching Italy he was met (*occurro*) by the Romans near the river Ticinus. Here a battle was fought, and the Roman Consul Scipio would have been killed, had not his son rescued him. Some indeed assert that it was a slave who saved the life of the Consul, but Livy would prefer that the story was true of the son.

LATIN UNSEEN.—(*Time, forty-five minutes.*)

Translate into English :—

(1) Oppidum erat Zeta, quod aberat a Scipione decem millia passuum. Huc Scipio legiones duas misit. Quod postquam Cæsar ex perfuga cognovit, egressus cum omnibus copiis oppido potitur, et Regino, qui ei oppido praeerat, capto ipse redire coepit.

(2) Est in Africa consuetudo incolarum, ut in agris et omnibus fere villis sub terra specus, frumenti condendi gratia, clam habeant atque id propter bella maxime hostiumque subitum adventum praeparent.

specus = cave. incola = inhabitant.

(3) Haec ubi dicta dedit, mille hinc —mirabile visu—
Cespite de viridi surgunt properantius arae.
Nec prius aut epulas aut munera grata Lyaei
Fas cuiquam tetigisse fuit, quam multa precatus
In mensam Fabio sacrum libavit honorem.

Lyaeus = Bacchus. libo = I pour out. honor = an offering.

(4) Hoc jacet in tumulo raptus puerilibus annis
Pantagathus, domini cura dolorque sui,
Vix tangente vagos ferro resecare capillos
Doctus, et hirsutas excoluisse genas.

General Paper.—(*One hour and a half.*)

(*Each section, i.e., Scripture, History, and Geography, to be collected at the end of the allotted time.*)

(1.)—SCRIPTURE.—(*Half an hour.*)

(1) Where do the following quotations come from? Briefly explain where necessary. Try any four.
(*a*) Few and evil have been the days of my youth.
(*b*) Is it peace? What hast thou to do with peace?
(*c*) Man shall not live by bread alone. Where is this quoted in the New Testament.
(*d*) He must increase, but I must decrease.
(*e*) Are ye able to drink the cup that I drink of?
(*f*) Almost thou persuadest me to be a Christian.
(*g*) For now we see through a glass darkly.
(*h*) Pure religion and undefiled before our God and Father is this . . . Finish the quotation.

(2) Explain what is meant by: High Place, Grove, Teraphim, Priest, Levite.

(3) Write not more than three lines on any four of the following: Bethel, Shiloh, Samaria, Ramoth-Gilead, Capernaum, Damascus, Antioch, Thessalonica.

(4) What charges were brought against our Lord before Pilate? What reasons were given for the charges?

(5) Write not more than six lines on any four of the following: Jacob, Joshua, Samuel, Elijah, Josiah, Nehemiah, Paul, Timothy.

(2)—HISTORY.—(*Half an hour.*)

(1) Short accounts of any two of the following battles: Marathon, Pharsalia, Evesham, Bannockburn, Marston Moor, Blenheim, Sedan.

(2) Short accounts of any two of the following: Pericles, Epameinondas, Sulla, Augustus, Simon de Montfort, Pym, Walpole, Peel, Bismarck, Wiclif, Bacon, Milton.

(3) How is a new law made? Distinguish "Bill" from "Act."

(4) Explain shortly any two of the following: Militia. Assizes, the Three Estates of the Realm, the Bill of Rights, the Succession Act, the Septennial Act, the First Reform Act.

(3)—GEOGRAPHY.—(*Half an hour.*)

(1) Explain any two of the following: Equator, latitude, antarctic, glacier, tides, trade winds.

(2) Where are the following mountain and hill ranges:—the Vosges, the Carpathians, the Andes, the Caucasus, the North and South Downs, the Chilterns, the Mendips. Any four.

(3) Say what you know of any six of the following rivers, mentioning the sea into which each falls: the Amoor, the Limpopo, the Niger, the Amazon, the Yalu, the Seine, the Elbe, the Danube, the Severn, the Thames, the Trent, the Shannon, the Tay.

(4) Two lines about any six of the following: Lyons, Leipzig. Odessa, Turin, Aberdeen, Belfast, Cardiff, Winchester, Port Arthur, Lhasa, Lake Baikal, Nigeria.

What are the capitals of Holland, Switzerland, Bulgaria, Japan.

(5) From what countries do we get our chief supplies of corn, timber, tea, wine, wool?

(6) What do you know of either (*a*) the Dominion of Canada, or (*b*) the Commonwealth of Australia?

French.—(*One and a half hour.*)

[*N.B.—Half an hour will be allowed for each of the three sections* (A, B, C) *of this paper. They will be collected separately on the expiration of the time allotted for each.*]

A.—GRAMMAR.

(1) Conjugate in full :—
(*a*) Present indicative (negative) of *le nier* (to deny it).
(*b*) Perfect conditional (affirmative) of *s'amuser*.
(*c*) Present subjunctive (affirmative) of *je vends mon cheval* preceded by *il faut que*.

(2) Use the adjectives of columns A with the nouns in columns B :—

A.	B.	A.	B.
cet oiseau *blanc*	fleur	des œufs *frais*	roses
un soldat *suisse*	servante	mon chapeau *neuf*	robe
un dieu *grec*	armée	notre frère *cadet*	sœur
ce *bon* livre	plume	sa sœur est *muette*	frère
un homme *boiteux*	femme	la *première* leçon	livre

(3) Re-write the following six times, inserting the words given below and making the necessary alterations ;—Des maisons.
(*a*) Beaucoup. (*c*) La plupart. (*e*) Bien.
(*b*) petit. (*d*) vieux. (*f*) Point.

(4) Rewrite the following sentences, substituting a personal pronoun for the expression printed in italics :—
(*a*) Il parlait *aux enfants*.
(*b*) Je pense *à mon voyage*.
(*c*) Il a besoin *d'une plume*.
(*d*) Il a écrit *les lettres*.
(*e*) Nous obéissons *à notre père*.
(*f*) Parlez *de vos aventures*.

(5) Give the 3rd plural of the present indicative, preterite or past definite, and past indefinite of the following verbs (each set of verbs on a separate line) :—
s'en aller, revenir, s'asseoir, dormir, vouloir, les voir.

B.—EXERCISE.

(1) Translate into French :—
(*a*) He started (past indefinite of *partir*) at a quarter past one.
(*b*) He will return (*revenir*) next week.
(*c*) I must know it (use *il faut que*).
(*d*) How long have you been learning French?
(*e*) They will be punished unless they do it at once.
(*f*) Whatever you do do it well.
(*g*) Do you believe that he can do it?
(*h*) That is the best house I know.
(*i*) You ought to have given them to me.
(*j*) Where are the letters? Have you not yet written them?

(2) I got up (past indefinite of *se lever*) at half-past seven. When I came down (*descendre*) breakfast was ready. I took a cup of tea, some toast with butter and a fresh egg. As soon as I had finished my breakfast I went out, because I had a headache. The weather was beautiful and the birds were singing merrily. When I came back (*rentrer*) the postman had just arrived. After reading my letters I set to work.

C.—Unseen.

(1) Translate into English :—

Le chien Bob, raconte un journal anglais, a péri sous les débris d'une charpente.[1] Dès que le tocsin[2] sonnait, il s'élançait avant les pompes[3] et arrivait toujours un des premiers sur le théâtre de l'incendie ; aussitôt qu'on avait dressé les échelles, il y grimpait, entrait par les fenêtres et pénétrait dans les chambres avant les pompiers eux mêmes. Il portait un collier de cuivre avec ces mots : "Ne m'arrêtez pas, mais laissez-moi courir, je suis Bob, le chien des pompiers de Londres." Pendant les années de son service, il a sauvé la vie à plusiers personnes par son intelligence et son devouement.

(2) Translate into English prose :—

Une nuit claire, un vent glacé. La neige est rouge.
Mille braves sont là qui dorment sans tombeaux,
L'épée au poing, les yeux hagards. Pas un ne bouge.
Au dessus tourne et crie un vol de noirs corbeaux.

(3) Translate into idiomatic English :—

(*a*) Il vaut mieux tard que jamais.
(*b*) Je m'en suis tiré sain et sauf.
(*c*) Il est au bout de son latin.
(*d*) La fin couronne l'œuvre.
(*e*) Il s'agit de savoir s'il consentira.

English Paper.—(*One hour.*)

(*Each section to be collected at the end of the allotted time.*)

(1) Reproduction of a Short Story.—(*Twenty minutes.*)

Reproduce the substance of the story that has been read to you.

(2) Essay.—(*Twenty minutes.*)

Write a short essay on any one of the following subjects :—

(*a*) A description of any town, *or* district, *or* museum, *or* castle, *or* cathedral known to you.

(*b*) What line in life would you like to follow? Give your reasons.

(*c*) The importance of looking at both sides of a question.

(3)—Grammar Questions.—(*Twenty minutes.*)

(1) The plural of : *fly, money, index, crisis, sheep.*

(2) Give instances of the following kinds of nouns : *common, collective, abstract, concrete.*

(3) Principal parts of the following verbs : *cleave, awake, freeze, shrink, weave, strike, slide, clothe.*

(4) The subject and the predicate of the following sentences :—

(*a*) *Sufficient for the day is the evil thereof.*

(*b*) *'Tis certain this play will never please.*

(5) What are meant by these terms? Give instances : *metaphor, simile, allegory, alliteration, rhythm.*

(6) Explain the construction of the words in italics : This house is *building* ; this house *to let* ; he is wiser *than I* ; *me*thinks.

(7) Rewrite in clear and correct English :—

(*a*) Jones told the driver of his motor-car that *he* would be the death of *him* if *he* did not take care what *he* was about, and mind what *he* said.

(*b*) I did not hear what you said coming so suddenly into the noisy room.

Not to be given out to Candidates.

English. (I.)

The following story is to be distinctly read twice to the Candidates. They are then to reproduce the substance.

(Latimer tells how he was examined on a charge of heresy.)

Once I was in examination before five or six bishops, where I had much trouble. Every week twice I came to examination, and many traps and snares were laid to get something. At the last I was brought forth to be examined into a chamber hanged with tapestry, where I was before wont to be examined, but at this time the chamber was somewhat altered ; for, whereas before there was wont to be a fire in the chimney, now the was taken away, and a curtain hanged over the chimney, the table stood near the chimney's end ; so that I stood betwe the table and the chimney's end. There was among the bish one with whom I had been familiar, an aged man, and he next the table end. Then he put forth a very crafty questi and such one indeed as I could not spy so great danger And when I should make answer, "I pray you, Ma Latimer," said he, "speak out, I am very thick of heari there may be many that sit far off." I marvelled at this tha was bidden to speak out, and began to suspect, and gave an to the chimney. And there I heard the scratching of a pe the chimney behind the curtain. They had appointed one write my answers. The question was, "Master Latimer, you not think, on your conscience, that you have been suspe of heresy?" A very subtle question. To hold my peace been to grant myself faulty. To answer it was every way of danger. But God gave me my answer, else I could n have escaped.

[1] La charpente, timber work. [2] Le tocsin, alarm-bell. [3] La pompe, fire-engine.

June 29th.

(*Each section to be collected at the end of the allotted time.*

Arithmetic.—(*Time, forty minutes.*)

(1) Find the prime factors of 45, 27, and 12. Hence the least number into which each of the given numbers divide exactly.

(2) Write as a decimal $4+\frac{5}{10}+\frac{7}{1000}$.

(3) Simplify :—

(*a*) 4 − ·27. (*b*) ·0673 × ·0124. (*c*) ·053 ÷ ·25

(4) Simplify :—

(*a*) $\frac{3}{4}\times\frac{3}{5}+\frac{1}{6}$. (*b*) $\frac{3}{4}\times(\frac{2}{3}+\frac{1}{6})$.

(5) Express £2·75 as £. s. d.

(6) How many equal lengths of 14 centimetres can be cu from a rod of length 1 metre 45 centimetres? What length remain?

(7) Find the cost of 23 fishing rods at £1 15s. each.

Algebra.—(*Time, forty minutes.*)

(1) Find :—

(*a*) The number of pence in a sum of x shillings y pence.

(*b*) The cost of z articles when x cost £a.

(2) Write as shortly as possible :—

(i.) $aa+aa+aa+aaa+aaa$.

(ii.) $(aa+aa+aa)\times(aaa+aaa)$.

(3) Examine whether or no

$(x+1)(x+2)+(x+3)(x+4)=2(x^2+5x+7)$

(*a*) when $x=2$, (*b*) when $x=-2$.

(4) Simplify $(x+y)^2-(x-y)^2$.

(5) Solve the following equation, explaining each step e in words *or* by a reference to the axiom used :—

$$\frac{x}{5}-3=\frac{x}{3}+4.$$

(6) I distribute a sovereign among 30 people, giving s 6d. each and the others 1s. 4d. each. How many receive each?

(7) Reduce to its simplest form the fraction $\frac{x^2+x}{x^2+2x}$

Check your answer by putting $x=2$.

Geometry.—(*Time, forty minutes.*)

(1) Measure the angle A of the given triangle.

(2) Measure (in centimetres and decimals of a centimetre) side B C of the given triangle. (A triangle was printed on paper.)

(3) Find, *either* by drawing *or* calculation, the diagonal rectangle whose sides are 2·7 inches and 4·6 inches.

(4) What is the sum of the angles of a triangle? of a qua lateral? If two of the angles of a quadrilateral are equal, the two others are 127° and 43°, what are the equal angles?

(5) Find the area of the given triangle in square centimetr

(6) X Y Z is a triangle in which angle Y = angle Z. Pr that X Z = X Y.

(*Candidates may answer any of the following questions instead of an equal number of the above questions.*)

A. Point out the fallacy in the following reasoning:—PQR is a triangle having PQ = PR; X is *any* point on the side QR. Join PX. Then in the triangles PQX, PRX we have PQ = PR, PX common, and ∠Q = ∠R (since △PQR is isosceles) ∴ QX = RX ∴ X is the mid-point of QR.

B. Give the construction and proof for drawing (with ruler and compass) a straight line perpendicular to a given straight line of unlimited length, from a given point outside it.

C. Prove that a triangle cannot have more than one obtuse angle.

D. If the square described on one side of a triangle is equal to the sum of the squares described on the other two sides, then the angle contained by these two sides is a right angle.

Science.—(*One hour.*)

Alternative with Latin Verse.

(I.)—PHYSICS.

(1) A weight hangs by two strings, each making an angle of 60° with the vertical. Show that the tension of each string is equal to the weight.

(2) A uniform rod 10 feet long and weighing 5 lbs. is pivoted 3 ft. from one end. A weight of 50 lbs. is hung on the end nearer to the pivot. Find what weight must be hung on the opposite end to balance the rod.

(3) Gravity is often measured by the number 32. Explain this. A body is thrown up with a velocity of 48 f. s. In what time will it lose its velocity? In what time will it return to the hand? How high will it go?

(4) A rectangular vessel on a square base is filled with water. Find the relation between the height of the vessel and a side of the base in order that the fluid pressure on one vertical face may equal that on the base.

(II.)—BOTANY.

(1) Enumerate the floral whorls from outside inwards. Explain what is meant by cohesion and adhesion among floral organs. Make a careful drawing of the section through a flower in which petals and stamens adhere to the calyx tube. Name a flower in which you have observed this structure.

(2) A potato is often spoken of as a root. Is this correct? Give reasons. Name three other cases in which a similar error is made, explaining the real nature of the organ in question.

(3) Draw sections shown in cutting lengthwise through a bean (or acorn) and a grain of barley (or date stone). What difference would be observed during their early growth? Of what great divisions of plants are these characteristic respectively?

(4) What plants would you expect to find in flower in a damp wood on a clay soil in April? Describe one or more of them.

Latin Verse.—(*One hour.*)

Alternative with Science.

A.

(1) Scan:—

Mille manus illis dedit et pro cruribus angues,
Atque ait, In magnos arma movete deos.
Ut stat, et incertus, qua sit sibi, nescit eundum.
Bellum erat. Etruscas Turnus adoptat opes.

(2) Arrange as hexameters and pentameters:—

Et esse proximus quamquam tibi semper cŭpĕrem
Qui lŏco urbe mĭnus ab Ausŏniă distet.

Laeti sanguĭne praedōnum saepĕ vĕniunt dŏmum
Et bŏves rĕdĭgunt actos in rūra sua.

B.

Turn into Latin Elegiacs:—

Me miserum cerno
Unhappy-man that-I-am, because I shall-not be-seen in that turba
crowd,
noster lumen fruor iste
Nor-will my eyes be-able to-enjoy those-(eyes)-of-thine;
facio aliquis noster (next line) subeo
May-the-Gods grant that-at-some time my [name] may-occur-to-thee,
miser
And thou-mayst-say, "Alas! what doeth that unhappy-man?"
quis perfero
If any-one shall-have-conveyed these thy words to-me,
fateor (prev. line) prōtĭnus exilium mollis
I-will-admit that-from-now my exile is more-bearable.

C.

Turn into Latin Elegiacs:—

(1) The winter now is banished;
(2) The rains have followed after;
(3) Where Etna's snows have vanished (*deliquesco*)
(4) Spring leaps with joyous laughter:
(5) The daffodils are springing,
(6) A myriad golden gleam;
(7) The lark and finch are singing
(8) By hillside, vale and stream.

NOTES.—Lines 3 and 4 may be transposed. Lines 5 and 6 may be expanded by mentioning other spring flowers, some welcome for their scent, provided that line 6 is applied only to the daffodils (narcissus). In lines 7 and 8 supply a verb to each line. Any other birds, *e.g.*, turtle-dove or nightingale, may be substituted.

[*Papers were also set in* GREEK *and* GERMAN.]

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Les Français d'Autrefois. By Jetta S. Wolff. vii.+88 pp. (Arnold.) 1*s.* 3*d.*—Miss Wolff has written an acceptable little volume of stories from the history of France. She tells of Clovis and Charlemagne, of Bertrand du Guesclin and Jeanne d'Arc, of Louis IX. and Louis XIV. Her language is simple and interesting, and is explained, where necessary, by a few suitable notes. It is to be regretted that the vocabulary is incomplete.

Le Français chez lui. By W. H. Hodges and P. Powell. vii.+81 pp. (Arnold.) 1*s.* 3*d.*—This useful little book is intended "for boys of fourteen or fifteen, whose knowledge of the language is still elementary." Doubtless there are such boys, though it is regrettable. They will certainly be interested in this reader, which consists of a number of short stories, the account of an English boy's visit to France, &c., edited on reform lines, *i.e.*, with a *questionnaire* and grammatical exercises. It is satisfactory to find that publishers are becoming more and more ready to issue books of this type, as it shows that the newer ideas about modern language teaching are making headway.

Adolf Stern, Die Flut des Lebens. Edited by E. M. Prowse. vii.+55 pp. (Arnold.) 1*s.* 3*d.*—Miss Prowse has edited Stern's admirable short story, by supplying questions on the text, and on word-formation, as well as a brief glossary of the most difficult words and proper names. She has done her work conscientiously. The book forms a welcome addition to the small number of books which are at once of high literary value and suitable for an intermediate form.

Premières Lectures. By F. B. Kirkman. iv.+32+xxxi.+xii. pp. (Black.) 1*s.*—An elementary reader, containing talks about France, fables, verses, &c., with capital reform

exercises. The book is well illustrated, partly by photographs taken by Mr. Kirkman in Paris. His series is becoming well known by this time, and there is no further need to praise the skilful and interesting way in which he has edited this and other volumes. The reform teacher always opens them with pleasure, convinced that he will find some useful "tips." It is worth remarking that the book can be obtained with or without the French-English vocabulary, which, by the way, is incomplete. We have noticed few slips (Bérenger, three times, is strange), and few worn-out blocks (that of a bed, on p. 13, might well be discarded).

Practice in Conversational French. By F. S. Grose and H. Webber. viii.+112 pp. (Blackie.) 1*s.* 6*d.*—The first part consists of dialogues, the French and English being on opposite pages. They are well written, but would have gained in lucidity if the speakers had been designated. The second part is a *questionnaire*; the third contains a few questions in English, which are also to be answered in French. We have noticed a few inaccuracies, *e.g.*, *un prison* (p. 20), *impressioner* (p. 26), and a few curious renderings, *e.g.*, "The key (*le clou*) to the Exhibition," "What a different aspect the London streets present"; but, on the whole, the book is good.

H. Hansjakob, Aus dem Leben eines Unglücklichen. Edited by E. Dixon. xix. + 149 pp. (Macmillan.) 2*s.*—This is a volume in Mr. Siepmann's series, and has been excellently edited. We have found many interesting notes which do Miss Dixon great credit, and only few slips (*e.g.*, *Donauschingen* on p. xii., Shakespeare misquoted on p. 50.) As to the suitability of the story for an elementary class, teachers will form their own opinion; to us the whole spirit of it seems altogether wrong, for it is narrow, full of pessimism, and at times almost cynical.

Classics.

Corpus Poetarum Latinorum, a se aliisque denuo recognitorum et brevi lectionum varietate instructorum. Editit Johannes Percival Postgate. Fasc. IV., quo continentur Calpurnius Siculus, Columellae liber X., Silius Italicus, Statius. xii. + 430 pp. (Bell.) 9*s.* net.—This new *Corpus* has already achieved a place as the standard collection of Latin poetry, and its possession is indispensable to the scholar. The MSS. on which each recension is based are set forth by their editors in the preface. Calpurnius Siculus falls to the lot of H. Schenkl; Silius Italicus to Mr. W. C. Summers, a young scholar who has already deserved well of Latin scholarship; Statius, partly to the veteran Prof. A. S. Wilkins, partly to Dr. Postgate, who is also responsible for Columella. The earlier parts of the work will be a sure warrant for the thoroughness and accuracy of this. The poets of the silver age have attracted less attention than their earlier brethren, and they deserve less on their merits; however, it is necessary that those who use them should have the best possible text, and if many doubtful points are still left unsolved, it is certain that this is not due to want of trying. Statius, in particular, presents many great difficulties, which seem to be no nearer solution now than before. We hope that the publication of this work may increase the number of those who read Statius and Calpurnius, who deserve more attention than they get. It is certain that scholars will not always agree with the editor's judgments, although there is no such wholesale transposition here as in the Propertius; but the general verdict must be, that the book is a credit to English scholarship.

An Introduction to the Republic of Plato. By William Boyd. viii. + 196 pp. (Sonnenschein.) 2*s.* 6*d.* net.—This is a brief and unpretending abstract of the "Republic," compiled for "beginners in philosophy who find Plato difficult." It is not meant to be final, but only as an aid to further study. The writer criticises Plato's views when they are narrow or faulty as in his treatment of Art. It may be recommended as likely to be useful for its avowed purpose. There is no index to the book, a grave fault.

Euripides, Hercules Furius. Edited by E. H. Blakeney. xxx. + 182 pp. (Blackwood's Classical Texts.) 2*s.* 6*d.*—This edition has been carefully compiled, and contains much information both useful and interesting. The editor is especially good on literary topics, which he places most justly in the forefront of his study. The notes are full on illustrative points, and contain less than is usual of the elementary explanations which are too familiar in schoolbooks. Examples of unnecessary notes are those on 'Ατδα, 116; πῶς ἄν, 487. There is too much translation (*e.g.*, the choruses, 348-450, 637-700, &c.). The evidence for a raised stage in the fifth century is not so "inconclusive" as the editor states (119): it consists of allusions in literature which are inexplicable otherwise, direct statements of antiquaries, and the inferences from vase-paintings. The empiric fashion of dealing with problems, almost universal in schoolbooks, is well illustrated by the editor's treatment of γε, originally an emphatic particle, as he appears to feel once (on v. 1,236), it bears that sense often when it is commonly explained by ellipse (*c.f.* notes on 138, 610, 755). The original of the portrait of Euripides (p. xv.) is in the Louvre, which ought to be stated.

Examination Papers on Virgil. By W. G. Coast. vii. + 128 pp. 2*s.* *Examination Papers on Horace.* By T. C. Weatherhead. 99 pp. 2*s.* *Examination Papers on Thucydides.* By T. Nicklin. 109 pp. (Methuen.) 2*s.*—The authors in each of these books are divided into sections, and a paper given on each section. There is no doubt of their usefulness. Of course it is not to be expected that every important and difficult passage of the authors is to be found in the papers; but all the well-known difficulties are there, and a student will be able to test himself thoroughly by running through them after his study is complete.

Edited Books.

The Lay of the Last Minstrel. Edited by J. W. Young. xxiii. + 188 pp. (Dent.) 1*s.* 4*d.*—This edition covers the whole six cantos of Scott's greatest poem, and is efficiently done; although we are at a loss to know quite how the editing has been managed. The name of Mr. J. W. Young appears on the title-page as responsible for the introduction, notes, and glossary. But, in turning to the first of these, we find the introductory matter as concerns Scott himself signed "R. D.", and the more critical section unsigned altogether, which inclines us to the conclusion that more hands than one have been engaged in putting this book together, a practice which is not altogether to be commended, although in this case a signature is given to the work not to be attributed to the editor-in-chief. We make thus much of this apparently trivial point, because only recently an unsigned farrago of editorial work by different hands led to an emphatic expression of disapproval of our review from the nominal editor of a school book, who had not verified his co-editor's opinions and statements; and the whole procedure is unsound. Otherwise, this edition is beyond criticism. The illustrations are numerous, and in most cases beautifully executed, and the notes and glossary are quite scholarly and adequate.

Macaulay's Life of Samuel Johnson. Edited by H. B. Cotterill. xxi. + 135 pp. (Macmillan.) 2*s.* — Unstinted praise is the only due tribute to this capital edition. Mr. Cotterill's labours, and his success, as an educational editor, are well known, but it is in this book that we have them in their highest and happiest condition. He has made of this well-worn classic of Macaulay's one of the most interesting

have read for a long while. It is impossible to in this little volume without discovering that it is ich has all the ordinary merits of a school edition, extraordinary ones as well. The interest is chiefly in which are magnificent. They take up every point a note could reasonably be founded, yet there is not ny; they are an unmixed joy to any reader who loves his age. It is safe to say that no student of any n use this volume without gain in knowledge of ly interesting literary period.

's Oliver Goldsmith. By H. B. Cotterill. 7 pp. (Macmillan.) 2s.—This edition is highly y, and fully deserves to rank with Mr. Cotterill's on of Macaulay's great essay on Johnson. There is tion brief enough, but admirably full, clear and , and delightfully written; but the great feature of s the annotation of Macaulay's text. In writing his Cotterill has placed not only students of English ut all lovers of Goldsmith under an obligation; and re so full and illuminative that they are perfectly en with only the slightest reference to the text. The are also well done. Altogether an edition quite s place in this series.

rner. 127 pp. (Edward Arnold.) 1s.—This is a rses for children, and it may be said to be a good collection. The compiler has a quick eye for thing that slips into juvenile minds, almost without of memorising it, and remains there; and any for juveniles which is managed with this end in to be a success. A considerable poetic field has sed in order to provide these selections, hence we me old and inevitable pieces a great many that are er and better mint. Andrew Marvell, for instance, , and so does R. L. Stevenson, and Victor Hugo, Colman. Some carols at the end are not unwel- heir quaint hard rhymes; and some settings of the e Bible *as* poetry may help to teach the young idea t the right way later on.

's Lives of Goldsmith and Johnson. By J. B. John. pp. (Black.) 1s.—This edition is rather slight. in two brief introductory notes shows that he has holarship to have made it more substantial if that object. The notes are good and tersely put; and pily no "life" of Macaulay, and no literary estimate, eviewer to sigh.

History.

History Readers, IIIA. 255 pp. (Arnold). e stories in this book are well told, and come between nd "history." Of course much must be omitted, that the range is from 55 B.C. to 1901 A.D., but the s been carefully made, specially in Victoria's reign, Boer war of course looms large. The illustrations any of them being copies of famous pictures.

Geography.

ography Examination Papers. By W. G. Baker. ethuen.) 1s.—It is difficult to believe that teachers y exist incapable of setting questions in their subject ose contained in this booklet. If there are teachers y who wish to be saved the trouble of making junior forms, these papers will assist them.

Science and Technology.

The Natural History of some common Animals. By Oswald H. Latter. x. + 331 pp. (Cambridge University Press.) 5s. net.—We have already many excellent text-books of structural zoology; here at last is a much-needed manual dealing with the *physiology* of a number of the animals—earthworm, crayfish, cockroach, freshwater mussel, snail, frog, and others—which usually serve as types in elementary courses. The book is, perhaps, rather more technical than its title might imply, but for anyone with even a general knowledge of the anatomy of the types described it forms delightful reading. Recent zoology certainly has been, as the author says, "too closely wedded to structure," but there are welcome signs of a return to the spirit and methods of Swammerdam and Réaumur. This book is an admirable example of the reaction, and may be cordially recommended to the notice of all teachers and students of the subject. It contains fifty-four good illustrations, and several useful lists of diagnostic characters.

Observation Lessons on Plant Life. By Mrs. Beverley Ussher and Dorothy Jebb. xv. + 212 pp. (Newmann.)—This book contains a two years' course of lessons. It is illustrated by blackboard sketches, and by floral designs intended to serve as hints for the treatment of plant forms in conventional art. The blackboard sketches are somewhat crude, and the language is often lacking in precision. The designs are the best part of the book.

The Colouration of Animals and Birds as affected by their Environments: Four wall-diagrams, with handbooks. (Ruddiman Johnston.) — These diagrams portray examples of "Characteristic Life in the Arctic Regions," "Characteristic Life in the Desert Regions," "Characteristic Inhabitants of Forests, Jungles, Prairies, etc.," and "Protective Mimicry," respectively. They are well drawn and coloured, and, if care be taken to point out the different scales on which the various creatures are represented on the same diagram, will serve their purpose admirably. Each picture is supplied with an interesting booklet, which explains the circumstances which have brought about the results, and describes in detail the animals figured. The price of the set varies, according to the mounting, from 10s. 6d. to 40s.

Junior Country Reader. II. More True Animal Stories. By H. B. M. Buchanan and R. R. C. Gregory. vi. + 165 pp. (Macmillan.) 1s. 2d.—We have here another simple reading-book for young children. The tales are interesting and the illustrations excellent. The lessons provide much useful information about common animals.

A Primer of Philosophy. By A. J. Rappoport. 118 pp. (Murray.) 1s. net.—This is a clearly written and quite useful little book, consisting of two parts. The first describes the various branches of philosophy and gives a historical sketch of their development. The second gives the various solutions that have been offered of the metaphysical, ethical and epistemological problems at various periods of the world's history. The teacher will find it useful to read and then keep by him as a reference for explanation of allusions to the subject. There is a bibliography.

Chemical Laboratories for Schools. By Dr. D. S. Macnair. 24 pp. (Bell.) 6d.—A pamphlet containing hints to teachers as to the method of planning and fitting up a school laboratory and of conducting a school course in chemistry.

Mathematics.

Mechanics. By John Cox. xiv. + 332 pp. (Cambridge University Press.) 9*s.* net.—In recent years nearly every text-book of mechanics has shown the dominating influence of "Thomson and Tait"; it is therefore of the nature of a novelty to find a treatise that departs, at least in the earlier stages, from the lines of the well-known work on natural philosophy. In a vigorously written preface the author explains his attitude and adduces sound reasons for the method in which he develops the subject. There can be little doubt that the study of mechanics gains both in interest and in instructiveness by such considerations as are set forth in Book I., "The Winning of the Principles"; the subject, when studied in close connection with its historical development, is much easier of apprehension by the beginner, because more concrete and less technical, and what is lost in rigour of definition is more than made up by the contact with simple but important practical problems. Another advantage of this historical treatment is that the mathematical statement of the principles of mechanics, which is taken up in Book II., becomes much more intelligible; the discussion of the laws of motion is unusually clear. The applications in Book III. are free from trivialities, and are lucidly expounded, while the slight reference to rigid dynamics in Book IV. is sufficient to bring out some of the leading principles. It is interesting to learn that the course laid down in the book has been tested, with satisfactory results, with classes at McGill University; the amount of mathematical knowledge necessary for an intelligent study of the book is not large, while the frequent appeal to experiment is a valuable safeguard against the too common tendency to substitute mathematical problems for dynamical applications. As matters stand at present in this country, we fear the book will not receive the attention which its intrinsic merits deserve, but we sincerely hope that it will contribute to a reform in the teaching of mechanics which is urgently needed. An unusual but welcome feature in a modern text-book is the presence of four well-executed engravings of pioneers of the science of mechanics—Archimedes, Galileo, Huyghens, and Newton.

Elementary Mensuration. By G. T. Chivers. x. + 334 pp. (Longmans.) 5*s.*—Teachers in search of a good text-book of mensuration may be recommended to examine this. It is very complete, and while many sections and examples demand of the pupil a good knowledge of geometry, algebra, and trigonometry, the author has, we think, acted wisely in merely stating those formulæ which require for their adequate proof a knowledge of the Calculus. The text-books of practical mathematics in the days of our grandfathers contained applications to land surveying, and these were very popular in the rural districts. It is, perhaps, to be regretted that in this book land surveying is omitted; in rural districts it might be a pleasant variation on the routine of indoor work to spend a few afternoons in measuring fields in the neighbourhood of the school. But the book within the limits covered, and these are wide, is excellent: the very large number of examples will probably be an additional recommendation to many teachers. It would have been well perhaps had a little more been said about approximations in numerical work.

Constructive Geometry. By John G. Kerr. 121 pp. (Blackie.) 1*s.* 6*d.*—The full title of this little book is "Constructive Geometry, being Steps in the Synthesis of Ideas regarding the Properties and Relations of Geometrical Figures." The course developed in it is not merely one of geometrical drawing but a system of demonstrative geometry based, in the first instance, on observation and measurement. The range is, roughly, that of Euclid's first three books. In the earlier pages logical inference occupies a subordinate place, but becomes gradually more prominent as the development proceeds. The later portions of the book do not call for much in the way of remark, as there is not much that is new in them, but the earlier portions show considerable originality of treatment. A fuller discussion than usual is given of angles, based on the rotational definition (or description); negative angles and the radian measure of angles are introduced, and the conception of negative angles is utilised in discussing the rotation of a plane figure in its own plane. The movement of a plane figure without rotation leads to the consideration of parallel lines, and the following definition is given:—When a line can be brought from one position in a plane to another without rotation, the two positions of the line are said to be parallel. What axiom on parallels is used? Though not explicitly stated, it seems to us that Playfair's axiom is required for the proof given in (ii.) p. 46. If Playfair's axiom is thus, as we think it is, assumed, then the introduction so early of the rotation of a plane figure is perhaps unwise, though it is undoubtedly interesting. However that may be, the book contains much to interest and stimulate the beginner, and that, after all, is a great thing.

Preliminary Geometry. By Rawdon Roberts. 56 pp. (Blackie.) 1*s.*—This book is in the main a collection of exercises in geometrical drawing, with hints for the constructions required; some very good patterns are included. It is, we think, a mistake to avoid the use of decimals so much as the author has done. In the second exercise a distance is asked to be read to the nearest eighth of an inch; surely greater accuracy should be demanded even at the outset, and with a decimally divided ruler it can easily be obtained.

The Story of Arithmetic. By Susan Cunnington. xvi. + 239 pp. (Sonnenschein.) 3*s.* 6*d.*—Lessons in arithmetic are usually considered to be rather dreary, but their tedium may be often lightened by a judicious use of illustrations drawn from the history of the rise and development of arithmetical symbols and operations. Teachers may therefore welcome a book which sets forth in a comparatively short compass and in an interesting manner the leading stages in the evolution of arithmetic as we now possess it. This "story" is somewhat sketchy, but, though the list of the principal works consulted is very meagre and does not contain any except English books, the more important features of the history of arithmetic are correctly outlined; statements on some of the more obscure features seem to us to require revision or amplification. The proof-reading of the Latin quotations has been very badly done; the blunders in Appendix A are inexcusable.

The Fourth Dimension. By. C. Howard Hinton. viii. + 247 pp. (Sonnenschein.) 4s. 6d. — Speculations as to a fourth dimension are usually considered to be at best the harmless occupation of a leisure hour, but we quite agree with the writer of this interesting book that meditation on the subject of higher space may be a profitable exercise. The expositors of *n*-dimensional space usually require from their readers very considerable mathematical knowledge, or, at the very least, a mathematically disciplined intelligence; but no one need be deterred by his lack of mathematics from reading the book before us. The point of view is not that of the mathematician and the interest is not predominatingly mathematical; a reader who is interested in philosophical discussions will find much to attract him, even though he be tempted to infer that analogy is apt to be mistaken for demonstration. The book is very suggestive and merits a careful study.

Pitman's Scheme A Arithmetic. By W. H. Higden. (London: Pitman.)—We have before us Books II., IV., V., VII., in paper covers; the books contain respectively 36, 48, 48 and

65 pages, and cost 2d., 3d., 3d., and 5d. The matter of them consists of sets of examples and tables (without answers) ranging from simple addition, with which Book II. begins, to questions on Interest, Stocks, &c., with which Book VII. ends. The books are well printed on stout paper, and provide ample practice in the mechanical processes of arithmetic.

Pitman's Guide to the Teaching of Scheme A. Arithmetic. Book V. By W. H. Higden. 90 pp. (Pitman.) 1s. net.—This book belongs to the series referred to in the preceding notice. It contains, in addition to the above Book V. answers, hints and oral work. The hints do not seem to us to amount to very much: it is a pity if anyone is entrusted with the teaching of arithmetic for whom the matter given in the hints would either convey information in regard to arithmetical principles or yield suggestions as to methods of teaching.

Miscellaneous.

Items of General Knowledge. Compiled and edited by William Hughes. 53 pp., interleaved. (H. Grant.) 2s. 9d. post free.—This book has been prepared for the use of students, &c., particularly for the L. C. C. examinations. We wish it were possible to congratulate the compiler upon his achievement. It is difficult to see what principles, if any, have guided him in his selection of items. For example, the words "franc," "rouble," and "rupee" are explained, but nothing is said of the mark, lira, or other coins, and, from the standpoint of information, we are little benefited by being told that "a rouble is a Russian silver coin of varying value, used as a monetary unit." Again, the origin, as well as the meaning, of some phrases (*e.g.*, to "set the Thames on fire") is given quite correctly; but in other cases, where the origin is most interesting, and indeed essential to the comprehension of the full meaning of the phrase, no help whatever is given (*e.g.*, "Hobson's choice," "a Roland for an Oliver," "pound of flesh"). Many definitions are badly expressed (*e.g.*, "ordeal"), not a few are inaccurate, (*e.g.*, "harvest moon," "Ironsides," "refresher"), and some absolutely wrong. "Dog days" are not so called "because it was generally believed that madness among dogs was more prevalent during this period than at any other time." "Lines of communication" are not of necessity "trenches;" and Cambridge men will be not a little surprised to learn that "a wrangler is one who has obtained a place in the highest mathematical Tripos." Some of the explanations are in reality no explanations at all. It is little use to say that a "centimetre is one hundredth part of a metre," unless one is told what a metre is. Hussars and Lancers are not peculiar to the British army. To explain "Utopian" without any reference to "Utopia;" "Guelph" without mentioning "Ghibbeline;" "Bill Sykes" without naming "Oliver Twist," cannot fail to strike one as deliberate neglect of opportunities. A student who took up the book for the purpose of L. C. C. or any other examination, might very reasonably complain that when he is told that "to square the circle" means to attempt an impossibility, he has a right to expect that the nature of that impossibility should be made clear to him; and he might add that "creditor, debtor, photographer, locomotive, inscription, infantry," and several words of this kind, might well have been left out of the list, and the space thus saved devoted to the provision of the information which he wants, and for which — presumably — he has paid. There is in the book much that is correct and valuable, but the defects pointed out are so numerous and so glaring that a thorough revision is required before the volume can be placed with any confidence in the hands of those for whom it has been specially prepared. It may perhaps be added that it is strongly bound, well printed, and interleaved.

The Single-handed Cook. More Recipes. By Mrs. C. S. Peel. xi. + 207 pp. (Constable.) 3s. 6d.—Mrs. Peel's instructions are simple, practical, and practicable. The housewife who follows the guidance here provided will succeed in producing attractive and nutritious dishes at a reasonable cost. The volume will prove "a boon and a blessing" to many harassed household caterers.

School Hygiene. By Dr. R. J. Williamson. 26 pp. (Manchester: Sherratt and Hughes.) 3d.—A useful lecture by a trustworthy authority; deserves the careful attention of teachers.

Register of Teachers for Secondary Schools, being the List of Teachers registered in Column B of the Teachers' Register complete to March 31st, 1904. Compiled from official records by the Editor of the "Schoolmasters' Yearbook and Directory." xl. + 105 pp. (Sonnenschein.) 2s. net.—Like other works of reference, for which teachers are indebted to the Editor of the "Schoolmasters' Yearbook," this register will prove of value to all interested in education. The particulars published with the names of the registered teachers contained in the volume will show schoolmasters and schoolmistresses proposing to register the kind of qualifications and experience accepted by the Registration Council. The total number of teachers registered in Column B on March 31st, 1904, was 5,510.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Treatment of Tangents by the Method of Limits.

IN Vol. XXII., Session 1903-1904, of the *Proceedings of the Edinburgh Mathematical Society*, there is a "Note on the Treatment of Tangents in recent Text-books of Elementary Geometry," by Prof. G. A. Gibson, a copy of which has been courteously forwarded to me by the author.

I wish to join issue with the author, and, if possible, raise a discussion in your columns on the following points. Contrary to the author, I hold that:—

(1) The proofs are rigid, for there is no introduction in the slightest degree of the idea of limiting *values*.

(2) The tangent *is* only a special case of the secant.

(3) The only admissible definition of a tangent is "a straight line cutting a circle in *two consecutive* points, *i.e.*, distinct though indistinguishable.

(4) There is no analogy between working with an inequality, not expressed as a ratio or a difference—which is very correctly used as an illustration of fallacious reasoning—and working with an equality, which after all is only a handy method of writing a ratio equal to unity.

(5) If (3) is not granted, *i.e.*, if it is admitted, with Prof. Gibson, that the proofs he quotes fail, because "in the limit" (this phrase seems to cause all the trouble, it should be "in the special case") the triangle AOB disappears, then Prof. Gibson's own proof fails for the very same reason.

Should a discussion arise, I should be very pleased to supply the argument on each point, which I now omit to save space.

J. M. CHILD.

17, Clarence Road, Derby.

IN compliance with the request of the editors, I will state briefly the argument of the *Note* to which Mr. Child refers.

The proof that a tangent to a circle is at right angles to the radius to the point of contact is often given as follows. Let A, B be two points on a circle, centre O, and let A B be produced beyond B to C and beyond A to D. The radii O A, O B are equal, and therefore

$$\angle O B A = \angle O A B, \text{ or } \angle O B D = \angle O A C \quad \ldots \quad (1)$$

This equation is true however near B is to A; when B coincides with A, the angle A O B is zero, and therefore the angle A O C is a right angle. But when B coincides with A the secant becomes the tangent, and therefore the tangent at A is at right angles to O A.

Sometimes, instead of (1), the equation $\angle O B C = \angle O B D$ is used, but without any real difference in the proof.

My objection to the proof is simply that the conclusion has no relation to the premises. Equation (1) is a statement about the angles of a triangle O A B and cannot be established unless B is distinct from A; the conclusion, on the other hand, violates the essential condition that B is distinct from A, and therefore is not an inference from the premises laid down. The second form of equation (1) expresses exactly the same fact as the first, and the point C cannot be found except through the *two* points A and B; but when B coincides with A (and *coincides* is the word generally used) the position of C is quite indeterminate. The line joining A to a point coinciding with A is not the base of a triangle, nor is O A A a triangle in any sense relevant to the proof. If, when B coincides with A, O A B is a special or particular case of a triangle, what properties of a triangle does it retain? Sometimes the justification for making B coincident with A is grounded on the assertion that "what is true up to the limit is true in the limit"; but the assertion, in general, is false. To illustrate, consider a point E on the tangent A T. However near E may be to A, O E is greater than O A; therefore the statement is true when E coincides with A. If the principle is alleged to be applicable to equations but not to inequalities, that is a matter for proof; but no proof is or can be given, since the principle is false.

Mr. Child says that there is, in the proof criticised, no introduction of limiting values; but nearly every writer calls it the method of limits, though I admit that the proof is a travesty of the method. The proof by the method of limits is briefly this. Draw A T perpendicular to O A; A T is the tangent, because we can take B *so near* to A that the angle T A B shall become and remain as small as we please. As I state in the *Note*, and as is sufficiently known, it is expressly provided in the definition of a limit that the independent variable (in this case $\angle T A B$) *must not have assigned to it the value to which it converges* (in this case the value zero). The procedure by which B is made to coincide with A is a mere revival or survival of a fallacy exploded nearly two centuries ago.

Just a word in regard to Mr. Child's definition of a tangent. What meaning can be attached to the statement that two points are "distinct though indistinguishable"? Surely, to say that they are distinct means that they are distinguished. If the tangent at A is the line through A and the point on the curve "consecutive" to A, on which side of A does the point lie? If it does not lie on either side, where is it? If it lies, say, to the right of A, is there not one to the left of A? Unless the consecutive point *coincides* with A, it would seem that the tangent at A has three points in common with the curve. For advanced students, familiar with the method of limits, the phraseology of consecutive points may be useful as a kind of shorthand, but for beginners it seems to me totally unsuitable. What are the coördinates of the two "distinct" points in which the line $y = 2x - 1$ meets the parabola $y = x^2$?

In conclusion, let me say that I consider it exceedingly unwise *to perplex beginners with such* metaphysical subtleties as "consecutive points" or to train them in reasoning in which the conclusion violates one essential condition for the truth of the premises.

GEORGE A. GIBSON.

St. Boswells.

MUTUAL AID.

THE object of these columns is to afford teachers the opportunity of asking questions of and giving assistance to colleagues. The questions received to which replies are solicited will be printed first; following these will be the answers which have been sent in, and, to make such replies intelligible to all readers, they will be accompanied by the question. Readers are invited to send answers to any of the questions asked below by our correspondents.

The questions should deal only with educational matters, using the expression in a broad sense, and the publication or otherwise of any question must be left entirely to the discretion of the Editors.

Questions and answers should be addressed to the Editors of THE SCHOOL WORLD, St. Martin's Street, London, W.C., and should be accompanied by the full name and address of the sender, though not necessarily for publication. Each question or answer should be on one side only of a separate sheet of paper.

QUESTIONS.

A CONSTANT READER. I saw recently a notice of a new English grammar for children, written in the form of easy stories or lessons. I cannot trace it. Can any reader help me to find it? The only child's grammar written in the same style that I know is Mr. Marcet's, published by Messrs. Longmans. Are there any others?

W. S. What books have been published in this country on the teaching of arithmetic to young children by means of concrete examples?

E. P. How can my new cinder playground be got to "bind"? It is on a slope. It was laid down with eight inches of broken bricks and four inches of cinders.

W. J. T. Would some reader, with experience of school dramatics, suggest some plays or portion of plays suitable for production in a mixed school?

M. REGIS, Ghent.—Can anyone tell me where I can obtain English translations of the following books: "Les fâcheux," by Molière; "Siècle de Louis XIV," Voltaire; "Scenes of Travel," Gautier. I shall also be grateful for the name of a good history of French literature suitable for pupils preparing for the Oxford Higher Local Examination.

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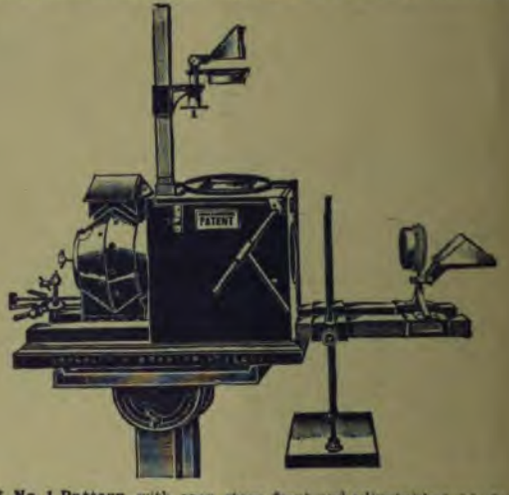

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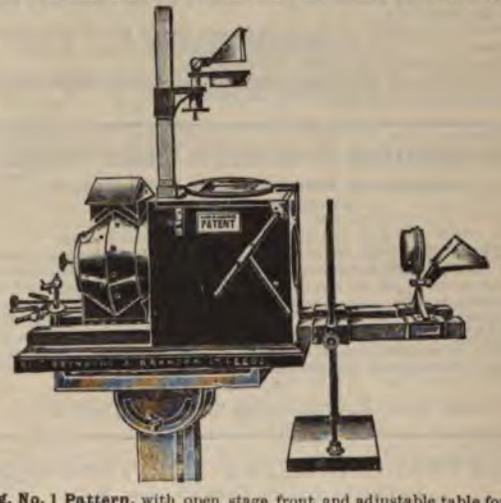

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'O say that examinations exist for the sake of schools seems, or ought to seem, like an obvious truism. But in England the re- e has been the case, and the obvious fact is the great majority of schools exist for the sake xaminations. Their whole work is planned a view to external examination, their suc- is gauged by external examination, their bers and very existence depend upon the ber of passes and distinctions, their whole life ounded by an examination, and the motto of ates is their daily canon: "The unexamined is not worth living." And yet the various ninations under which we now groan and ail have rendered marked service to English ation. In the time of *laissez aller* and isolated t they have benefited schools by indicating sort of standard at which they should aim, and sort of curriculum they should adopt. Such rmity as we possess we owe to the local ex- iations inaugurated by Sir Thos. Acland and late Archbishop of Canterbury. They have fited parents by affording them a rough and y test by which to distinguish an efficient ol from a non-efficient. In fact, it would seem e true in education that we only attain to the and normal order of things at two removes. as at the present moment in education supply preceded demand and is creating demand, in the past, examinations have created and lated schools, whereas ultimately in the nor- order of things schools will regulate examina- s. This is the stage we have now reached. stage of examination-tutelage is over, the age self-responsibility begins; examinations now t follow the school instead of schools following examinations.

his is the historical significance of the draft me for School Certificates which has been n up by the Consultative Committee, and is being circulated "without prejudice" by the rd of Education, who are careful to state "that they are not committed at this stage to any action in the matter."

The scheme is the outcome of an attempt made by the Headmasters' Conference in 1901 to obtain some synthesis of the various professional preliminary examinations. The Board of Education was appealed to and referred the matter to the Consultative Committee. The Committee found it impossible to answer the Board's questions without extending the scope of the reference and formulating their views on the general question as to the best method of testing the instruction in a secondary school. They set to work accordingly and, in order to ascertain the general attitude of those whom a change in the present system would affect, they held conferences with representatives of the Universities, the various Teachers' Associations and the professional bodies, including representatives from the War Office and the Civil Service Commission.

It had been known for some time that the Consultative Committee had "something up their sleeve." What one feared was a new Leaving Certificate Examination added to those already in existence, an examination organised by the State on the model of the Scottish Certificate Examination and using all the authority of the State to crush other competitors out of existence. It is a relief to find that this is not what is proposed. Such a proposal would have meant the supersession of many agencies which are doing already efficient work on a large scale, a piece of waste we cannot afford. It would have involved an amount of machinery and labour so huge as practically to absorb all the energies of the Board at a time when its energies are already taxed to the utmost in more fruitful directions. In Scotland some 60,000 papers are worked annually; a simple proportion sum shows the vast proportions which any parallel scheme for England would assume. It would be impossible for any Government department to conduct such vast operations with any human interest or human elasticity.

Another possible solution might have been the American system of "accredited" schools, as expounded by Dr. Gregory Foster in his Mosely Commission Report. Such a system gives elasticity enough, but it is hard to see how any uniformity of standard could have been maintained, and without it professional bodies would rightly

have refused acceptance. Moreover, the supersession of external examinations among schools to which hitherto examination has been the be-all and end-all here would have meant a general lowering of the level of attainments. The reaction would have been inevitable. What has happened in the elementary schools would have happened in the secondary.

What the Consultative Committee propose is the only wise policy. They propose not to supersede existing agencies but to stand behind them, to modify their procedure, but withal to recognise them, and to make them recognise each other, and make the professions recognise them all. In order to prevent any one of these bodies from sulkily standing out and refusing to co-operate in this national movement, the committee draft a politic clause which shows all the wisdom of the serpent:

> "That the Board of Education should constitute the Central Board as soon as, in their opinion, a sufficient number of recognised examining bodies have signified their willingness to be represented thereupon, and should take all steps that may be necessary to procure the acceptance of the certificates by the professional bodies."

At the same time, while recognising the existing agencies, the new Central Board will have some substantial and much-needed modifications to make in the method of examination.

In the first place, the committee finds it undesirable that certificate examinations should be conducted by means of the same papers set for the whole country. In place of the uniformity of subjects and of papers there is to be uniformity of standard. The main function of the Central Board will be "to co-ordinate and control the standards," but we are no longer to have among us the premature phenomenon who is pointed at of men, wherever he goes, as "the first boy in all England." This national instinct for race-horse competitions, obtruding itself in the sphere of education, has done harm enough already both to boys and to schools. Perhaps few things have so subtly undermined the true ideals of learning in this country.

Another subtle danger is avoided by discarding the title "Leaving Certificate" and substituting the title "School Certificate." Great is the potency of names, "especially," as Carlyle says, "in those plastic first-times"; the name "Leaving Certificate" raises dangerous suggestions in the mind of parents who do not as yet appreciate secondary education, and even, for the most part, do not understand what it means. The "School Certificate" will have the same value, and, though under another name, it will smell as sweet.

There are to be two grades of certificate: (1) a junior certificate, limited to pupils under sixteen years of age, which will have, roughly speaking, the value of the present junior Oxford and Cambridge Local, or the Second Class College of Preceptors; (2) a senior certificate, which would presumably act as passport at the same time to the higher professions and to the universities. It may even in time be a passport to the Civil Service and the Army, but of this no hint is given as yet.

Both these certificates will depend not only on what a boy accomplishes in the examination room but also on his having followed a regular course of instruction of at least three years in the school which presents him for examination, or some school of equivalent status. This should prevent the exploiting of a good school's name, which goes on at present. It is now a common practice to send a boy to a school of repute for a year, or even less, that so he may in after life claim to be "an old grammar-school boy," or whatever it may be. As though secondary education were a gourd that could shoot up in a night and yet not wither in a day. The proposed new certificate will be a guarantee not only that a certain standard of knowledge has been attained, but that the holder has followed satisfactorily for three years at least in the case of junior certificates, and four in the case of senior, a regular course of study recognised as adequate at a school recognised as efficient.

It is provided, further, that no school will be able to present scholars for the examination unless it fulfils two conditions: (1) that it be periodically inspected as a going concern either by the Board itself or by some university or other organisation recognised by the Board; (2) that the course of studies pursued in the school be laid before the examining body and approved by it. Such linking of examination with sane inspection will enable the examiners to take account of "the aims and characters of the different schools" and adjust their examination accordingly. It is the necessary condition for elasticity.

But a still closer linking of school and examiners is proposed. Clause No. 8 runs:

> "Since an examination held with the co-operation of the school in which a scholar has been taught is more likely to lead to a just estimate of the knowledge which he possesses than one held entirely by an outside body, the examination should be conducted in each school by *external and internal examiners*, representing respectively the examining body and the school staff."

This is the most novel feature of the scheme and it will entail most practical difficulty in the working out. As a "first-reading measure" we approve the principle, but there will be many crucial and knotty points to work out "in committee." Frankly, as a teacher, I would prefer not to know in any way what questions are to be set in examination. But, also as a teacher, I would value the privilege of suggesting the lines on which I had treated the subject, and the parts of it which I had brought into prominence. One teaches, for instance, an Epistle of Paul, laying stress on the argument and the ethical aspect of the question with which the apostle deals. The examiner sets, it may be, a paper which is entirely textual and critical. Clearly the result does not represent fairly the work of either teacher or taught.

eacher I welcome what amounts to the rein-
ıt of set books (clause 15). Of late there
reaction against them and the new regula-
the London Matriculation yielded to the
of either reaction or necessity. Now, the
p of "unseen translation" as the one and
ıdard of translation means that teaching
more and more purely linguistic and
ɔecomes scrappy. The recognition of the
ıed in the school gives a chance for the
of literary appreciation and a sense of
ɣs that are more excellent in letters: this
ɔate bloom, but, when one considers the
printed matter growing out of all propor-
ır growth in taste, it is just what should be
ıiling soul of all school work.

provision is made for oral examination
n languages. It is to be not optional but
ɔry (clause 15). Here the external ex-
an examine best through the teacher. I
ɔwn excellent university examiners, with
of intentions, absolutely fail to find touch
ɔlass of sixth-form boys in a *viva voce*
ɔion, and acknowledge their failure. Such
ıges would be obviated if the teacher
ɔnducted the examination, subject always
ternal examiner's directions.

e most important thing of all is that the
ɔr of these examinations, the man who
ınd has the final passing of the papers,
e a man who knows school from the inside,
omed to boys and girls and knows what
words and phrases they will understand.
ɪuently the questions for school children
n set by a young university don who did
, no doubt, to make questions easy, but,
', they are the sort of questions he would
ıself found easy as an undergraduate, and
hopelessly out of touch with a school
ange of ideas. I select two consecutive
ɜ from a paper set by the Oxford and Cam-
ɔint Board on the outlines (*sic*) of Greek

ıt were the elements which existed in
ɔr common action on the part of the whole
llustrate by facts."

ıs been said that the Homeric poems were
to as authorities on Greek politics. Can
ɜment be illustrated by facts?"

of these questions are more suitable for
ɸhs than for schoolboys. And this sort of
bound to recur when dons examine
. It has been a good move in the new
Matriculation regulations to associate a
ıster in each subject with the University
r.

ɪe same time it is important to keep
ɣ education in touch with the Universities,
a great feature in the new scheme that it
s in no way with this connexion as it
ıut affords much greater opportunity for
ening it, makes it more intimate and
he choice of the University open to the
of the certificate, by making the same
ɪe available for all. Already the new Universities of Lancashire and Yorkshire, at a conference held under the chairmanship of Mr. Arthur Acland at Manchester, have appointed a committee to draft a scheme in accordance with the proposals. Such a prompt response will encourage the Board to put into force as soon as possible the recommendations of their Committee, and the higher classes in our schools will yet be saved from a danger which has been hanging over them for many years and threatened to become chronic—the danger of degenerating into coaching establishments.

SOME ESSENTIALS OF PHYSICAL TRAINING IN SECONDARY SCHOOLS.

By C. E. Shelly, M.A., M.D., &c.
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THE principles of physical culture are the same, whatever be the field of their application. But very little consideration is needed to show that the schemes of exercises in which they are embodied must differ in several details in relation to the special needs of primary and secondary schools respectively. During the period of so-called "infancy"—which for school purposes may be supposed to cease at about the age of five or six—such differences as are found to exist in practice are mainly due to differences in the social status of the children concerned. The course of simple physical exercises prescribed for the "infants" of elementary schools might be carried out in the homes and nurseries of the well-to-do with at least equal advantage from every aspect of their educational value; and this is to a large extent secured to the youthful inmates by the conditions which obtain in every well-regulated household, and by the more intelligent solicitude by which their lives are safeguarded. The results secured by the teachers in elementary schools are apt to be less satisfactory, indeed, owing partly to a larger proportion of inferior material, as well as to the less favourable home-conditions of the young children themselves. But the principles of the training, and in all essentials its details also, are practically identical in both instances.

The contrasts in detail as between the physical needs of older children in primary and in secondary schools is much more marked; and here, again, it is most marked in proportion as differences in social position come into play. By way of simple and obvious example, the footgear worn by the child of the labourer or small artizan is more cumbrous and more cramping than that supplied to children in a higher walk of life: moreover, it is as a rule renewed far less frequently, so that the foot becomes more moulded to its heavy and unyielding covering, rather than the boot being made to fit the foot, and replaced by a larger one in some reasonable accordance with progressive growth. As a result, the finer foot and ankle move-

ments soon become practically lost to the poor child; and with them are lost the delicate adjustments of balance, and much of the physical alertness, the absence of which is indicated with sufficient plainness in his gait and carriage. Nor does the loss end here. So intimately related in their mutual reactions are the nerve centres concerned in alertness of body and alertness of mind, that the atrophy of one set through disuse inevitably tends to hamper the due and full development of the other. The child accustomed to light footgear which permits a reasonable play of toe and ankle joints, and who can don boots or shoes still more flexible when these are required, unconsciously reaps an immense relative advantage from every kind of game and other active exercise in which he participates. A similar contrast obtains with regard to the power of adopting, for other parts of the body, clothing suitable for exercise; and a matter at least equally important from the hygienic point of view is the ability to change that clothing when the time of active exercise is ended. If men are what they are, to some extent at least, by virtue of what they eat and what they drink, it is not less true that the development of the child is influenced to a greater extent than might at first sight be supposed by what it is made to wear; and, in its newer even more certainly than in its older meaning, "habit" makes the man. Viewed from this standpoint, the public schoolboy differs from his contemporary of the elementary school much as the modern infantry soldier in loose tunic and putties contrasts, in freedom of chest and limbs, in mobility and mental initiative, with his bestocked and rigid predecessor who fought at Minden. It may, in short, be admitted that the pupils in secondary schools are in certain very important and quite obvious respects far more favourably circumstanced, individually and by their environment, for profiting by physical exercises; and also that, as a result of the methods of their earlier life and of the healthy activity and stimulus which pervades the *régime* of the typical English school, they have no need for training in many of those details of physical exercise which children less fortunately situated must be taught *ab initio*. The question remains: what, broadly speaking, are their physical deficiencies; in what directions, more particularly, does the physical training provided by the ordinary school games and the exercises which usually form a part of the ordinary life of a secondary school need to be supplemented?

The ground may be usefully cleared at the outset by recalling the fact the exercise is but a means to an end: it is not the end itself. The most bigoted critic of what he calls "the craze for athleticism" would hardly refuse his support to a system of physical training properly organised for securing efficient physical development. Similarly, the most thorough-going advocate of school games must admit, upon due consideration, that they do not—and cannot—fulfil the whole duty of the individual to himself and his neighbour in this respect. Taken by and large, the general result obtainable from them is exceedingly good, viewed alike from the physical, moral and mental estimate of their effects; and, within the limits that they cover, this result would be excessively difficult to improve upon. But they cannot achieve all that may be secured for the individual; and, if those deficiencies which they leave more or less untouched were made good by suitable measures, the outcome would be men and women better developed all round, to say nothing of games played with a greater zest, because at a higher level of general ease, grace, and proficiency.

Although the average pupil in the secondary school is, in virtue of the conditions of his ordinary home life, fairly trained in most of the "massive" movements, there are many whose gait and carriage would be vastly improved by regular instruction in the proper methods of standing, walking and marching such as is regularly given to the children educated in primary schools. An altogether disproportionate number of the lads in many well known public schools hold themselves badly and "slouch" more or less in their walk. Military drill is to some extent a means of correcting this; but the fault is too common a one amongst members of the rifle or cadet corps. The reason is not far to seek: every boy in the school is not a member of the corps; and those enrolled in it are subject to drill only upon occasion; training in the proper carriage of the body is not habitual and continuous, and the tendency to bad habits in this respect is not effectually improved because it is not efficiently corrected; for the individual who is but intermittently and at comparatively long intervals reminded and stimulated to practise good habits can hardly be expected to abandon bad ones already contracted. All those exercises which favour an upright carriage of body are, for other reasons as well, so valuable in themselves, and are so fraught with advantage in later life, that their neglect during the plastic period of youth and adolescence is nothing short of a national reproach.

The ordinary exercises and games common to school life are deficient in training for the fine balance movements of the human frame. It is true that most of these are, at times and to some extent, needed for proficiency in many of the most useful and popular games; in some particulars some of them are attained by those who, largely for this reason, become the best players. But, for these relative exceptions, their acquisition is to a large extent accidental as it were; to the majority they are lacking, for the most part; and anything like regular and intelligent instruction in attaining this combination of graceful strength and alertness is non-existent in the secondary school. The gentleman's son of to-day is at a real disadvantage in some respects compared with his forebear of the eighteenth century, when skill in fencing and dancing were regarded as accomplishments necessary to his class and practice in riding one of his most ordinary habits. We know that many boys and practically all girls, are taught to dance; some learn fencing and boxing. But no young man

·days dance as their great-grandfathers ood that form of exercise; and relatively so practised in fencing and boxing and s as to have acquired "the polished d precision of the right movement in an icy." Yet a few minutes devoted every day tising certain simple exercises, such for as are clearly described in the syllabus edule of the report recently issued by the epartmental Committee on the Model of Physical Exercises,[1] would do a great vards lessening what is a negative defect us importance in the present system of ry education.

are at least two other details of physical in which the secondary school will soon even more unfavourably than it does at with the elementary school. Too many never learn to breathe properly. Some ble to do so on account of unnatural and re- e obstruction in the upper air-passages—a n necessarily attended with other unfortu- ults detrimental to healthy activity of both id body—although the ordinary observer sily fail to detect the earlier and slighter f this trouble, especially if the child be only when it is comparatively at rest. most healthy schoolboy fully exercises thing organs only occasionally and during of his more strenuous games. During all rs of his "work," the respiratory move- re greatly restricted, and the aëration of d proportionately limited. The effect of ggravated in more than one direction if his y work has to be carried on in a crowded m and in a cramped position. And with speedily acquired an almost insuperable shallow breathing whenever he is engaged itary labour, which leads too often and in ays to further evils of serious import. he real value of the recommendation to t every lesson by two or three intervals of or two, during which the whole class stand individually practise deep breathing—each the chest to its fullest capacity and then the inhaled air as completely as possible. ork" does not suffer either in quantity or by these interruptions, which refresh and both body and mind; although their value viously depend a great deal upon the care avoid overcrowding of the classroom in instance, and to maintain a healthy, duly d atmosphere as far as possible through- period of its occupation.

is, as indeed in all other instances, care taken that the good effects of the training one direction for a few minutes at long is not wiped out and lost by a lapse into osite evil habit of body during a larger he remaining portion of each day. Though secondary does compare favourably with ientary school, since opportunities of ob- the physical bearing of the pupils are practically continuous throughout the working hours. This observation has a special bearing upon the maintenance of a good carriage of the body, both when active and when at rest. The former is more easily assured, for bodily activity implies a certain amount of general muscular tension, and the stimulus to apply this in the correct fashion is more quickly learned, and becomes automatic at the cost of comparatively little effort. This is much less certainly the case in regard to postures which are in themselves more or less attitudes of rest and muscular relaxation, and sometimes have to be assumed under physical conditions which are not favourable to a correct or healthy pose. This applies with especial force to the attitude assumed by the pupil when sitting at his work—applies, in fact, to the way in which his body is held during a considerable portion of each day. It is, therefore, of particular importance, since it is obvious that a bad and cramped position at the desk, habitually indulged in, is bad not only in itself—positively as an evil, negatively as the loss of a good—but that it must inevitably lead to a permanent negation of other physical advantages which are being aimed at in other directions. It is a quite impracticable counsel of perfection to provide for each pupil in the school a seat and a desk of the dimensions and proportions exactly suited to his individual needs for the time being; but it would not be impossible to provide in each classroom seats and desks of suitable shape, and in, say, three slightly different sizes. Such an arrangement would provide the members of the whole class with sitting and writing accommodation much better adapted to their several needs than is available under the conditions which commonly obtain in these matters. In any case, each seat should have a back, set at the proper inclination for reading and writing at a sloped desk, thus avoiding the bodily distortion (as well as much of the fatigue on which that depends and which it accentuates) inevitably associated with the use of ordinary forms. At the same time it is necessary for the form-master to be on the alert to detect and discourage incipient "lolling," and to encourage the maintenance of a good position of the body in the case of each pupil while "at work." The girl or boy who clearly has difficulty in maintaining a good, upright-backed and free-chested posture should promptly be submitted to the attention of the medical officer. Many a case of incipient disease of the spine and hip, to say nothing of that local "weakness" of the tissues which, if neglected, soon develops into a distinct spinal curvature, would thus be detected at the stage when remedial measures can be adopted with the greatest prospects of success. Visual defects, again, become more obvious and are more likely to attract attention in the course of teaching every pupil to assume a good position at his desk, and the child who finds difficulty in reading ordinary print at the average distance—say about 12 inches—demands special examination under this head.

But in these things, as in the many other cognate matters on which there is here no space to touch,

[1] Eyre and Spottiswoode, 6d.

little of practical value can be achieved for the pupil unless the master himself possess a knowledge of the elements of school hygiene at least equal to that which is compulsory in the case of teachers in primary schools; and the essentials of that knowledge should not be withheld from the scholars. It is still only too true that those all-important principles which form the basis of an intelligent and efficient care of his own body are not in any way directly taught to the pupil in secondary schools. Yet, as individuals, their need is not less than that of their fellows in the primary schools, and their claim to this share of a full "education" is not less urgent; and this not for their own sakes only. To them, in the ordinary course of events, will fall in due time a governing power which can never be wielded with intelligence or full advantage to the community if they themselves be ignorant of the alphabet of health, or have been taught, by negation, to regard it as a matter beneath or beyond their direct attention. In the case of girls this is of especial importance. The foundations of national health and healthy development must be laid during the earliest years of life. The mother and the nurse are the first teachers; upon how they are taught and trained from early girlhood upwards depends whether they shall be the best.

THE COMING OF THE NEW SCHOOL-BOOK.

By ARTHUR BURRELL, M.A.
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IN the present paper I do not wish for one moment to be unthankful to our active and enterprising publishers: rather do I ask what it is that prevents our demanding reformation in certain departments of school literature.

School books, like everything else, change with their time and generation; and much that was once vivid and useful is vivid and useful now only to the antiquarian. Alcuin's "Conversations with Pippin," the *Promptorium Parvulorum*, Linacre's Grammar, Stanbridge's Ovid, Cato's Distichs, and such tracts as "the Brainbreaker's Breaker, or you shall learn Latin whether you will or no," are not likely to be wanted in any schoolroom. The books of our great grandmothers, too, are quite dead. Only for amusement do we take up the grammars, the Globes, the Hieroglyphic Bibles, and the Peacock's at Home. We are so unwise as to make fun of them, knowing how much better we teach and learn; we wonder that these books were ever used in any school; for, as we are always being told, their decades are as far removed from ours as are the days of the Armada. The barrier of the nineteenth century lies between us and the use of "the globes."

Of the books of our own school days we can speak with a fuller knowledge: many of them live on and reappear more correct and fuller of habit than in our day. Is Colenso's "Algebra," that slim, curiously-covered and unacademic-looking book, still on duty? Is Hume's "England" as dull as ever, and Smith's "Greece" as interesting? Do any later mathematical works rival Todhunter's larger Algebra and Trigonometry in their tint of paper and in their delightful power of lying well open on the desk? Will the boys of to-day look back upon *their* school books with a discriminating affection?

But, since we were young, "an enormous improvement has taken place in the department of school books." So say the newspapers. Books are well printed, well illustrated, cheap. The "Readers" are more interesting, and children's literature is good in tone. The questions that *will* be asked are these: Are the new histories and geographies really good books, worthy of the interest that is taken in the schools, or worthy of the new school buildings? Are the literature texts satisfactory? is not the boasted improvement exaggerated?

The mathematical and science books may be put on one side. Nobody denies that here the day of the new school-book has come; admirable books are admirably re-edited, and we keep pace with the times. But, to come to homely subjects, in what way are spelling, grammar or composition books superior to their fore-runners? I speak, of course, from a limited and personal knowledge, and shall no doubt be corrected. There is, indeed, one book on Composition, which is new, filled with life and overfilled with suggestions; it hails from America. Probably the good teacher needs no composition book; but books are written for the rank and file. Even the best teacher will probably admit the freshness of Mr. Huntington's work, a perusal of which can only be compared to a day's conversation with an inspiring personality. Mostly our books aim at making the child write grammatical sentences; this book aims at making the child write. The child is crammed with ideas: he can talk all through a summer's day; and the aim of this book is to make him talk on paper. A boy learning to ride a bicycle scrambles on anyhow, and is often helped on: the idea being to make it possible for him to reach the end of a short road, when he promptly falls off. The beginner in swimming has somehow or other to get across the bath. The child learning to speak French or any other language has to put words together regardless for the present of gender and past participles: he has to speak. *His pride in his work consists in his being allowed to do a good deal, to read a good deal, to write a good deal.* The rigidity of grammar, the memorising of nouns, the absorption of rules, the tortoise-like real progress, are all important, but not in the early stages. "The child must not learn to hate what he cannot yet love." Our present teaching of composition, if one may judge by the reports of those who correct essays by the thousand, leads even at the ages of nineteen or twenty to an amazing impotence of imagination, to a mellifluous rounding of sentences that mean

How different is the brief but full com-
ıf the boy who, having spent days in the
n write about a "day in the woods," even
e tells you that you "come home in
ng, your arms full of wild enemies"
s). Of him something can be made:
rect writers nothing: for they have learnt
:o produce analysable sentences and to
l with commas; but they have not learnt

phy is, as we all know, a possible centre
en studies. The present geographical
ine as they are) are but collections of
interesting enough, but unsatisfying and
ırief. Nobody seems to think that the
ıld like *full descriptions* of those parts
rld of which he is learning. The largest
es contain but meagre descriptions; the
re granaries of facts. But our readers
ıing fuller, and when the demand comes
uller still. An admirable series, now
rint but still selling, was published
eligious Tract Society some time ago;
xperiment was not repeated. We can-
:t teachers to travel, and even if we
ɔm to read, there is nothing for them to
the libraries except expensive books on
: in any sense written from the teacher's
t. After thirty years of active publish-
of world-wide travel and of progress in
of illustration, it seems that the best
r the teacher to follow is to collect from
and friends cheap tourist-guides written
thought of the schoolroom. A sixpenny
Normandy is far better than the few
ɔn the subject in our school geography,
e guides are poorly printed and unbound.
vnes and the re-edited Cornwell, full as
lemand greater space. Like Oliver, we
ɛ.
he new geography does come, will it take
ɔf 150 booklets at 6d. each, written on the
e guide-book and kept carefully year by
o date as some (German) atlases are;
these books come, will they contain for
le-books do) a certain amount of history?
ifficult to speak with patience of our
ıistories." "If school histories were
ɜ they should be," says Mrs. Clement
"boys and girls would cry to read
The evil is recognised, and historians
the so-called histories year after year;
ɔlisher moves, for the risk is too great.
: exception of Mr. Arnold Forster's
hat is there now holding a good place
ıools that can be called a book at all?
achers who know their history tho-
ıre compelled to discard all books
short date-list; but what a strain this
ıny but the well-stored enthusiast who
t of his treasures things new and old.
correlation of history and geography (to
ıg of the additional intervention of lite-
recognised by only a few. And again,
ɔle to produce anything that is full and
readable, anything that will lead to a liking for these studies, unless by a series of monographs cheap and fully illustrated?

So much vitriol has been poured on the present teaching of literature in many quarters that it seems ungracious to add further words of condemnation. But are not the editions of the text of Shakespeare, Wordsworth, Scott, exactly what they ought not to be? Not good enough, full enough, or scholarly enough for the teacher (unless we except such books as Verity's "Hamlet"), they are too good, too full and too scholarly for the boy. They are got up in school fashion; they are with a few exceptions unattractive, hard cornered, ugly in colour. As for their "ins," they are arranged on a plan, and nearly all publishers follow this plan. First comes the life of the author. Then follows an essay on the sources of the plot. Then follows quoted criticism of the play or poem. These all appear before the text is reached—the text which is the real thing for which the student is waiting, which is to be his loving study (if his work is to profit him at all). Then follow necessary and unnecessary notes, and last come an index and some examination papers.

Now the teacher and the private student require much more than this; but I am dealing with school books, and the child in any school needs, first, secondly, and lastly, the text. The text well and cheaply printed; the text, clearly bound, an item in the small child's small library; this is what we want, and up till now it is the item which has been neglected. Our present school editions point the aspiring student to everything except the text. Whatever are our faults in teaching the classics, we cannot be accused of putting doubtful biographies and second-hand criticism before the consideration of the text.

Yet this need of the text is being recognised, and among our new school-books we may find a sixpenny Wordsworth (without a note in it) or an eighteenpenny copy of one of the Temple Classics; while many publishers are really giving a helping hand to those who would rescue English classics from the claw of the examiner. The real reason for the unsatisfying school edition is this: better editions for the children are not in demand; labour-saving editions are wanted everywhere, and *the teacher cannot be relied on to know his subject.* Thus the publisher, who can scarcely be asked to lead English educational taste, can hardly be blamed; he must provide what is wanted. Long ago, in a school book now almost forgotten, Prof. Hudson told us how to read Shakespeare; even the aggressive Mr. Wells points out in scathing sentences what our books and our "teaching" of literature ought to be; but the examination (always written, never oral) rules and decides all questions, and if anybody asserts, as distinguished persons do from time to time assert, that we should know and love our *texts*, and relegate all criticism to a second place in the training of the young, that person is considered antiquated. He *is* antiquated; for this is the way in which literature was once studied

Yet the new school-book is coming; it is possibly part of the resuscitation of a more humane way of treating humane literature. A few "new" books can be pointed to, and it is probable that when, as one writer suggests, "literary-minded persons are set to write the school books," the change may come upon us suddenly. For the teacher, as usual, will follow in the wake of the book, and will revise his methods.

No mention has been made of Greek, Latin, French, and German readers. The question of the method of dealing with all these languages is being hotly debated, and we cannot complain of the want of activity on the part of the publishers. Even here, however, we need little more than cheap texts and plenty of them. Our friend Teubner is as valuable as ever. Two attempts have lately been made to revive the older and more interesting way of studying the classics by a school edition of Erasmus' "Colloquies," and by a shortened Vulgate; but as yet no success seems to have attended the effort.

The reference to the Vulgate brings to mind the great library known as the English Bible. Of this as a groundwork for study it is almost hopeless to speak. No publisher, it is reported, will look at a shorter Bible for schools; no child's Bible, except Canon Rogers's, now out of print, seems to have succeeded; and Mr. Stead's and Prof. Moulton's volumes, which do not pretend to be Bibles at all, are the only texts which can with safety be put into a child's hands. And again, can the publishers be blamed? There is one gleam of hope. The Board of Education has at last, along with its admirable forecast of what we may soon be doing in primary schools, allowed part of the prophecies of Isaiah to be studied as English literature in the examination for its certificate. But the Bible, without which English literature and a large part of English life and history cannot be understood, is outside school studies, and even a nodding acquaintance with it is becoming less and less common.

THE average American sends his children to the public school—in default of a better term, I am forced, says a writer in the *Cornhill Magazine*, to follow American nomenclature—without the slightest sacrifice of gentility. With the exception of the wealthiest classes in the large cities, children of all classes attend these schools. Most small towns are without other primary schools, unless parochial schools are maintained by the Roman Catholic Church, and in a city of 200,000 people children of professional men attend public schools as a matter of course. The higher schools of the system are so well recognised as preparatory schools for the university that many American colleges accept a certificate of graduation from a high school in place of an entrance examination. Yale, Harvard, Princeton, Vassar, and Wellesley are recruited from the public schools. The President of the United States sends one of his sons to a Washington public school. In this there is no attempt to appear democratic. It is merely the custom of professional families in Washington, and if the grocer's boy sits at the right of the President's son, the heir of a justice, a general, or a railway magnate may be his neighbour on the left.

RECENT FRENCH EXAMINATIONS.

By DE V. PAYEN-PAYNE.

THE great impulse that has been given to the teaching of modern languages in England during the past decade, by the introduction of more living methods of tuition, has not yet found much echo in the papers of the chief examining bodies. In part this is, no doubt, inevitable, for the examination of oral work by written answers is hardly possible. But, in the opinion of many, the old-fashioned type of paper—containing one short piece to be translated from French to English, another to be translated from English into French, concluding with half-a-dozen grammatical questions restricted to very definite portions of accidence—has not been sufficiently modified. Most boys and girls before leaving school aim at passing a qualifying examination which will serve to admit them to many professions. The best known of these are the Oxford and Cambridge Joint Board, the Matriculation of the University of London, and the Local Examinations of the Universities of Oxford and Cambridge. The work of a large number of the secondary schools of this country is determined by the requirements of these examinations.

The alteration that has recently taken place in the mathematical syllabuses of every examining board shows what can be done by a small body of energetic reformers. What is possible of accomplishment in one subject ought not to be impossible in another. The chief need for improvement appears to be in the direction of introducing *viva voce* work, which should certainly be compulsory on all candidates of sixteen and upwards. At present there is no oral test at all at the London Matriculation; probably the authorities have thought it would be impossible to obtain sufficient examiners to deal with such a large number of candidates within a reasonable time. Ten candidates an hour is almost the limit that can be taken individually by each examiner, and to complete the oral examination in two days would require a body of over thirty examiners. But, if this is impossible, the example set by the examiners of the Scotch Leaving Certificate might well be followed. A short tale in English is read out twice by the superintending examiner to all the candidates. They then write the substance of the passage in their own words *in French*. This ensures a certain ability to compose a short narrative on a given model. Or the piece might be read out in French to more advanced candidates, which would necessitate a comprehension of the spoken word. At the University Local Examinations an oral examination is optional for seniors since 1902; but we believe that no great number took advantage of it in the first year. For the Joint Board Higher Certificate dictation and conversation are compulsory.

One of the most beneficial results of the raising of the standard would be the improvement of the status of the modern language teacher. It would

not be possible for a school of any standing to be without a modern language specialist, just as now it has its classical, mathematical, and science masters. We believe it is still the practice at many large schools for the form master to take the French and German of his form, although he is the first to confess he is not qualified to do so.

With regard to the London Matriculation, it had ong been a matter of common knowledge that the standard in French was not so high as in many ther subjects. This was one of the reasons why nodern languages were not allowed as an alternative to Latin. Lately the examiners have shown most laudable desire to raise the standard. But, raising the standard of an optional subject, it is ecessary to proceed with some caution, or candiates will be driven to choose other optional subcts. The recent introduction of free composition an excellent feature; so is the setting of questions French to be answered in the same language. ut it will be necessary to choose the piece of ose for translation into French with great care, id not to require too wide a vocabulary at first. he most suitable pieces would appear to be hisrical or some other simple narrative. It is now cognised that it is better to set a few sentences be translated, with reasons to be given of any fficulty, rather than to set bald questions of the pe of "What is the plural of *bijou*, or the past rticiple of *taire*?"

The Higher Certificate of the Oxford and ambridge Joint Board is of a far higher standard an the London Matriculation, and is spread over ore time. There are four papers, for which the ne allowed is six and a half hours in all. The st paper deals with French grammar, and is vided into two parts; the first has seven quesns, needing—to answer them—a thorough knowlge of the accidence, the second has four estions, three on syntax and one on historical ammar. In the first part one of the questions as, "In what three different ways may *six* be nounced? Give an example of each." In the ond, two of the questions are on prepositions, or lack of them, following verbs. On the whole s a paper likely to test thoroughly a candidate's owledge, but, with the exception of the pronuntion question we have quoted, it is drawn up roughly on the lines of the Latin and Greek ers of the same examination. The second per consists of five idiomatic sentences to be nslated, and a choice of an easy, or more difficult, ce of prose, according as the candidate aims at tinction or not. With regard to the sentences, think it would be preferable to set regular oms than colloquial sentences such as the follow: "We breakfasted off a boiled egg and a tton chop."

The more difficult piece of prose in 1903 was a ce of Macaulay describing the defects of Johnson. However well known it may be to ndidates (for the extract is to be found in many rks on French composition), it would test his cabulary considerably, and the time given (one-a-half hours) is not at all too much for it. A candidate who could gain fair marks would find no difficulty in passing the Final Pass Examination at Oxford.

The third paper consists of unprepared translation. Three pieces are given, one on a comparison between Racine and Shakespeare, which would test a candidate's literary powers; a second on the effects of floods and landslips in the Pyrenees, and a third in poetry on "A Virgin Forest," of which the difficulty may be judged by the last two lines:—

> Où par les mornes nuits, geignent les caïmans,
> Dans les roseaux bourbeux où luisent leurs yeux ternes.

On the whole, the translation both from and into French strikes one as entirely literary in tone, and resembles very much a B.A. pass examination. Whether a large number of boys at school can reach this standard—excellent in itself—may be doubted. For those who have any literary taste it would be a splendid test, but we think that the majority would waste their time in attempting the impossible.

This resemblance to a final pass school is further accentuated by the last paper, which is on set books. Here the candidate has three choices. He might take, in 1903, Molière's "Misanthrope," Racine's "Athalie," with M. Faguet's book on the French drama, or Coppée's "Pour la Couronne," and Erckmann-Chatrian's "Histoire d'un Paysan," or finally, de Tocqueville's "L'Ancien Régime." If the choice lay with the candidates, we think that the majority of them would take the second alternative, but the choice usually rests with the master, who may have read de Tocqueville, and wish to save himself trouble. Why this particular book should be such a favourite with Oxford examiners we have long been at a loss to discover. To sum up, then, we may say that for the rare literary boy this examination is an excellent one, but for the average English school-boy it is drawn altogether on wrong lines, and much above his possible powers of attainment. We say this always presuming that more marks are allotted to the unseen than to the prepared translation, for it has been universally acknowledged that set books may be easily got up by pupils otherwise inefficiently equipped in modern languages.

To turn to the University Local Examinations, we find that the Seniors have one two-hour paper in which they have to answer five questions in accidence, two of which are composed of sentences, a piece of easy unseen and a more difficult one, and a short piece of prose; and then either portions from a set book or two more pieces of unseen translation. It would seem that to gain high marks a candidate would have to write very quickly to get through the whole of the paper. Two longer pieces of unseen would appear to be preferable to the four short pieces a candidate has now to translate. The questions from the set book alone occupy nearly a page and a half of ordinary print.

The Junior candidates have likewise a paper in three parts, divided in the same way as the

Seniors', and the same remark as to its length applies. We find here again the bald grammar questions, such as: "Give the feminine of *blanc* and the comparative of *sage*." But there are far less of them than before, and sentences involving rules are much more common.[1] In the near future it is to be hoped that the set books will disappear, although it will be difficult to ensure that real literature will be read and not a mere collection of snippets. This might be attained by asking questions on the subject matter of certain books set beforehand, and by being careful to take the unseen passages from the best authors.

All the above examinations should have 50 per cent. as a pass minimum; with 33 per cent. it is possible for candidates to pass without any power of composing in French.

QUINTILIAN ON EDUCATION.

By Wm. Murison, M.A.
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IN examining any theory of education, it is well to note exactly what the author of the theory regards as the end and aim of education. Does it mean to him the imparting of culture, the training of the mental faculties, or the giving of useful information? His answer to this question may not be our answer, but that should not bias our judgment on his exposition. What we have to consider is whether he has worked out his scheme in accordance with his aim. This consideration must be always borne in mind when we examine the only existing study of general education which has come to us from Rome. For we find that in it the main idea is to sketch a course of training which shall suit one definite purpose. This Roman scheme is contained in Quintilian's treatise on the art of public speaking, his *de Institutione Oratoria*. As the most renowned teacher of oratory in the latter part of the first century A.D., Quintilian knew the importance of a general education, and it is significant that the first book of his work deals with the preliminary training requisite for the boy who seeks to become a professional orator. Be it observed that the demand made is not, as now, that he shall have passed this or that examination, but—what is quite different—that he shall have undergone a certain course of training. Bearing in mind, then, this particular end, we shall consider what Quintilian has to say.

At the beginning, he insists that the really great orator should be a man of high character. It is not enough to possess natural talent: it is not enough to study diligently. These must be, but in oratory, as in other professions, character is of supreme importance.

Quintilian would not send a boy to school for systematic instruction till the age of seven, but he holds that before this age much can be taught at home. From the very first, parents should be careful that neither from themselves nor from nurses and "pædagogi" shall the child learn anything in speech or morals which he must afterwards unlearn. A rare consummation which still remains a dream! As soon as possible a beginning should be made to teach the child Greek, while he is imbibing Latin unconsciously. But the formal teaching of Latin should not be delayed too long, and ought to proceed *pari passu* with Greek. Quintilian's reason for starting with Greek is that it was the source of Latin culture. He is neither on the side of those who would study a foreign tongue to the exclusion of the vernacular nor on the side of those who would defer instruction in every foreign language till the mother tongue is thoroughly known.

By the age of seven, reading and writing should be acquired, and on these subjects Quintilian gives details. He recommends that the name and the shape of the letters be taught together, and approves of games with ivory letters, and of any other device to stimulate the infant mind. The child should be carefully taught to pronounce syllables properly, and drilled in the quick repetition of words and phrases difficult to pronounce. Reading should be slow and accurate at first: in due time speed will follow. All uncommon words are to be explained.

Since ability to write was in those days not regarded as indispensable, Quintilian advocates it on the score of usefulness. The child might learn to write by imitating the letters on wax, or by having his hand guided, or by following outlines of letters engraved on a tablet. It is the last method that Quintilian prefers. The "copies" set should be wise proverbs and maxims, so that the child's memory may be stored with golden sayings. Such "copies" we often hear decried nowadays, and we find them displaced in favour of commercial headings, *e.g.*, "Ten gallons, three quarts, one pint."

When the boy reaches the age of seven, it must be decided whether he shall go to school or be under a tutor at home. On behalf of the latter, it is urged that he can give undivided personal attention, and that there is less fear of corruption of morals. Quintilian, however, is emphatically in favour of school. He shows that depravity does not necessarily belong to the school system: the corruption laid to the charge of schools is often the result of bad home life. He prefers the openness and freedom of school to the seclusion and isolation of home.

Quintilian points to the great superiority of the school in the fact that the best teachers are invariably found there, and he recommends parents to choose a good school where the classes are small enough to allow a certain amount of individual attention to each pupil. Often this is unnecessary, because some subjects can be taught as effectively to many as to one. Another

[1] The French paper set at the first Common Entrance Examination to Public Schools on June 28th, and printed in the August number of The School World, might be studied with profit by many examiners. Although some of the questions might be difficult for a boy to understand, it has evidently been set by a practical teacher.

of the school is that the boy is not all ery day under the same teacher. For orator the school is essential, for by ı others he will lose all self-conceit and f facing a crowd. At school pupils learn the success or the failure of others: nspired by ambition, which, though vil, is often the mainspring of good t school friendships are formed, arising ıionship in studies. Finally, it is in a teacher's powers are best called how can a man be eloquent with an one?

ı next lays down as the mark of a true .t he should be acquainted with the ıd the nature of his pupils. Memory, f acquiring and retaining knowledge, is hed for as the first sign of genius in :er that comes imitation. Quintilian, mark, does not mention the power of . The teacher, however, must beware g precocity for genius, and he must by iscourage precocity. As to disposition, over which pupil requires to be driven, e led. Games are invaluable for dis- :rences of temperament, but they are :om another point of view: they afford Pupils must have proper relaxation ıat their minds may be refreshed and ed.

Roman schools of those days, as in ıes, flogging was exceedingly common: sus Orbilius" has become proverbial. s altogether opposed to flogging, which ıs disgusting, futile, unnecessary, and nto a man's hand a power over children ıght not to possess. Whether corporal should be done away with can hardly , I imagine, without reference to the pupil for whom we are legislating. ers feel that it is well to have this :serve, but they know that the effect of every other—punishment is in inverse :o the frequency of its employment.

of seven will now be entrusted to naticus," who for the next few years : him in reading, speaking, composition, ıd grammar—all subjects essential for orator. Quintilian has something of say as to the boy's reading. Begin r and Virgil, even though at first they lly understood. Let him also read the selections from the lyric poets, Aesop's poetic tales. The elegiac poets, if read be kept till later: the comic poets are should be read with care. The cus" ought to exercise great dis- in deciding what histories to use and nit. Enunciation is of supreme im- nd the pupil must be taught to read r emphasis and understanding, in a et, natural tone. It is easy to see how his was for the training of the future even a writer of to-day cannot afford to art of reading aloud. It attunes his ear, and the more delicate his ear is the more musical will his style of writing be. The authors read, says Quintilian, should be interpreted, and criticised as regards both manner and matter. The pupil should be exercised in composing on a variety of themes. Quintilian demands that the Roman youths shall be thoroughly and systematically trained not only in Greek grammar, but also in Latin. For he believes that, if the speakers and the writers of the native language are to employ it correctly, they must be drilled in the grammar of the vernacular. This is at variance with the opinions of some of our authorities, who say in effect: "Take care of the foreign language, and the vernacular may take care of itself."

This linguistic course of study is near akin to the professional instruction which the boy is now ready to receive from the "rhetor." But such a preliminary training by itself Quintilian did not consider sufficient, and therein he differed from the extreme utilitarians of his day, who triumphantly asked, "What has an orator to do with an isosceles triangle, or a statesman with the notes of a cithara?" Quintilian replies that he is picturing not a fluent speaker merely, but an ideal orator, who like the wise man must be perfect. As additional studies he recommends music, astronomy and geometry. Plato laid stress on the ethical value of music and on the power of geometry and astronomy to elevate the mind from the sensuous to the real; but Quintilian, while advocating these studies as promoting general culture, cleverly turns the position of the utilitarians by showing how these subjects will prove of practical use. Music will help the orator in the movement of his body and the modulation of his voice. Geometry will make him conversant with weights and measures: astronomy will free him from the fear of eclipses.

Pupils should take part in dramatic performances, which will enable them to acquire correct pronunciation and gesture. A graceful pose will come from dancing and from exercising in the "palaestra."

But it may be objected that such a variety of subjects will be too much for boys of that age. In answer to this fear of "overpressure," Quintilian points out the quickness and elasticity of the human mind, by which it is enabled to look in more than one direction at the same time. Besides, the change of subject is itself refreshing. Experience also shows that the dread of "overpressure" is groundless: the young mind can easily stand the strain; in fact, it is only in boyhood that time can be found for these subjects. The boy should not be all day long engaged in linguistic studies with the "grammaticus." And what better employment could be found for his leisure than music, geometry, acting or dancing?

Such, in brief, is Quintilian's sketch of general education. Like the rest of the *Institutio Oratoria*, it displays his sound judgment, keen discrimination, deep reflection and long experience, and even for us of the twentieth century it should not be devoid of interest and of help.

AN AMALGAMATION OF THE OLD AND NEW METHODS OF TEACHING FRENCH.

By NEVILLE W. ROSS, B.A., B.-ÈS-L.
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II.

(*Concluded from p.* 300.)

INTERMEDIATE STAGE.—At this stage we have slightly to alter our procedure, in view of the various forthcoming examinations. The boys' ages will be from about twelve to fifteen years. In the lower classes our main object has been a good pronunciation and a fairly fluent vocabulary, in the higher stages we have to pay more attention to grammar and to correct writing. Easy reading pieces, to form the basis of a large portion of the teaching, are chosen; simple poems for recitation replace the songs. These also provide a means of drilling in the grammar and vocabulary. The method of treating a passage read is the same as explained in the elementary stage, but more variety of question and answer is necessary. The boys are encouraged to ask original questions and to give unprompted answers in French.

This is always an amusing as well as a real test of their comprehension of the text. The grammar reaches a rather less elementary stage, more attention is given to each point met with in reading, and the irregular verbs are more thoroughly mastered.

In the second year of the intermediate stage, original composition is begun; simple letters on school topics, such as "the Holidays," or "Games," are set, short anecdotes (even from an English source) are written in French, pieces that have been thoroughly prepared are set to be written as far as possible in the writer's own words. All this is done without reference to any book whatever. Dictation of passages that have been read by the class are given at least once a week.

In the third year, when the boys take an examination such as the Oxford and Cambridge Joint Board Lower Certificate, a simple reading book, as *Une Aventure du Célèbre Pierrot*, replaces the short, disconnected pieces hitherto read. A few simple poems taken, such as La Fontaine's Fables, are added, the whole being worked on the method previously described. This method does not permit us, with the limited time at our disposal, to read an author right through during school hours; different passages are therefore selected to illustrate various grammatical points, such as the different uses of the imperfect and preterite tenses, of the subjunctive mood, or the agreement of past participles. The whole story itself is divided into about thirty approximately equal portions for home-reading, and a *devoir de style* is set on each portion. These home-reading lessons are not translation lessons in the ordinary acceptation of the term. Only the thread of the story is to be extracted, and all new words are underlined and their meaning given at the next lesson.

The passage, selected to illustrate certain constructions are thoroughly treated as previously described, but more time is given to practise the class in the formation of similar constructions, and the conversation on the subject matter is more varied than in the elementary stage. Each point of grammar, after being carefully explained, forms the subject of another exercise in the "drill," a lesson on that point being also set from the grammar-book.

For setting the grammar home-lessons we have found the "Practical Primer of French Grammar" by Prof. Spiers, most useful. Pieces for reading in verse and prose, given in phonetics and in ordinary spelling, we get in the "Junior Reciter" by the same author. Mansion's "Free Composition" is a valuable adjunct for this section of the work.

Now as to the arrangement of the various parts of the work we have mentioned and the amount of time allotted to each. In the intermediate and advanced stages many forms have only three periods every week of forty-five minutes each, with two home lessons.

We consequently arrange the work in school in such a way that every home lesson is merely the revision (by writing or learning) or amplification of some lessons given in school. Assuming the first period in the week to be that in which no home lesson has to be taken, we begin by preparing a reading lesson as already described. On this lesson is based the *written* home lesson for next time. A dictation, consisting chiefly of seen pieces, is then read to the class; finally, the rest of the home work is set, consisting of a short revision lesson on some already explained grammatical point, and some previously prepared poem or reading piece to be learnt as repetition. As the home work is not to exceed forty minutes for the average boy, care must be taken that it is thoroughly prepared with the class, thus obviating the necessity for any reference to grammars or dictionaries, and enabling a great deal more to be set.

The first fifteen minutes of the second period is devoted to testing the home work. This is done by a few questions answered on paper while the repetition is being heard round the class. An exercise is then selected in the "drill" as illustrating some point in grammar met with in the reading lesson. This exercise is read, translated, and explained in the manner already described, and is set as written home work for the next lesson, together with the fair copy of the last corrected exercise done, a lesson on the special point that has been explained, with a few irregular verbs and the week's vocabulary. The last quarter of an hour or so is devoted to further development of the reading piece given in the previous lesson, either by the *questionnaire*, or by recitation in chorus, &c.

The third period in the week is spent in hearing

the home work and the fair copy of the "drill" (the latter generally by question and answer; for instance, in the example given above on the partitive article: *Question:* Le ministre qu'a-t' il? *Answer:* Le ministre a des projets ambitieux, &c.). The remainder of the time is either given up to the preparation of the reading book, to conversation on one of Hölzel's pictures, or to the relation of anecdotes.

An average time-table taken at haphazard runs thus:—

TUESDAY 11—11.45.

Grammar and fair copy of drill heard, exercise collected.
Reader prepared.
Conversation, pictures, anecdotes.

THURSDAY, 12—12.45.

No home work to hear.
Reader prepared.
Dictation (or unseen translation).

HOME WORK TO SET.

Devoir on reader.
Repetition (a few verses of poem, &c.
Revision lesson of grammar.
Five irregular verbs.

SATURDAY, 10—10.45.

Grammar and verbs heard on paper, *devoir* collected.
Repetition orally heard same time.
Exercises in "drill" prepared.
Grammar lessons explained.

HOME WORK TO SET.

Exercise in "drill" to be written.
Grammar lesson.
Fair copy of last "drill" exercise as repetition.
Five irregular verbs.
The week's vocabulary.

This arrangement has to vary somewhat as to actual material in the higher forms, but the same idea prevails throughout, namely, all home-work to be gone through before being set. This enables far more work to be set, and tends to prevent the making of "howlers." By selecting the grammar points, in the pieces read, to coincide with the sequence of exercises in the "drill," no important section can be overlooked.

It will have been noticed that two lessons of repetition are set in each week. The material thus assimilated forms a solid basis for the induction of grammar rules. The pupil has thus always at his command many examples from which to derive any rules required. In the last year of the intermediate stage the dictations given are from unseen sources and exactly on the same lines as in an examination.

ADVANCED STAGE.—Here the work has to be varied slightly, according to the examination to be taken by the form. The method of treatment remains the same, but more time has to be devoted to syntax, literature, historical grammar and translation of English into French. As it is impossible, with only two or three periods a week, to read in class the two or three set books that often form part of an examination like the Oxford and Cambridge Senior Certificate, and also to give the necessary time to conversation, &c., the same plan of dividing the set books into lessons for home reading is adopted, an essay or *résumé* of the portion read being set as home work. Passages on some literary or historical topic are then selected; these form the basis for nearly a whole lesson and are finally taken as repetition at subsequent lessons.

The books used in the advanced stage are: ("Practical Primer of French Grammar," "Senior French Reciter," "Rapid Exercises" (species of advanced drill), all by Prof. Spiers; Clapin's "Philology," Blouet's "Composition," "Commercial French," by Mansfield Poole and Becker.

To sum up, the main points in the methods we have adopted are as follows:—

(1) All lessons to be made as amusing, attractive and real as possible.

(2) A thorough training in pronunciation by means of phonetics.

(3) A systematic learning of vocabulary. (*a*) By means of pictures, &c. (*b*) By revision of vocabulary note-books. (*c*) By the learning of fair copies (type written, cyclostyled and pasted in exercise note-books).

(4) All work done to be thoroughly assimilated by continual repetition and by treating it from every point of view.

(5) Explanations to be given in English when necessary.

(6) Attention to the correct writing of French by an early and systematic training in the essentials of grammar.

We claim to have obtained the following results:

(1) A fairly good pronunciation throughout the school.

(2) In the senior classes an ability to carry on a fairly long conversation, fluently and grammatically; in the lower classes a readiness and correctness in answer.

(3) A distinct change from dulness to brightness in the lesson, in many cases the boys looking upon French as a recreation.

(4) The development of a taste for French literature, history and the language generally.

(5) The destruction to a great extent of that spirit of intolerance towards anything strange or foreign which is so strong in boys of every nationality.

(6) The attainment of that ideal of all education, the mental training which alone produces a cultured mind.

About a hundred of the boys regularly exchange letters, magazines, &c., with boys of their own age and station in France. Nothing, we believe, has more vividly brought home to our boys the reality of French. In certain cases the progress made, especially in vocabulary, has been most marked. This progress is an evidence of the interest French has aroused, and it is the outcome of the system now described.

Further evidence of the boys' interest, and of their dawning enthusiasm for French literature, is shown by their appreciation of the lending library of French books we started about a year ago. At

the present moment over a hundred boys have books in their possession, and these comprise boys even in the elementary stage, some of whom change their books more than once a week. A short written synopsis is all we ever ask in return, but even this is quite voluntary.

But perhaps the most striking testimony to the fluency that has been acquired, and to the "keenness" the boys show for their work, is the success of the "Société Française de Discussion." This society, consisting of about forty members, nearly all of whom come regularly to the debates (which take place on alternate Friday evenings), was started about six months ago. It is no unusual thing to hear a boy make an extemporaneous speech of ten minutes' duration, and about half the members find an opportunity for saying a few words. We need hardly point out that this gives the final death-blow to that curious sense of constraint which nearly all English boys seem to experience when called upon to express their thoughts in a foreign language.

Of course, this method is in no way ideal, or even original. We trust, however, that it will, at any rate, be of some assistance to those who are desirous of teaching a modern language on rational lines, and that it will enable them to avoid many of the possible fallacies advocated by the ultra-reformers.

THE TRAINING OF SECONDARY SCHOOL TEACHERS AT THE UNIVERSITIES.

VIII.—UNIVERSITY OF LEEDS.

LEEDS has just entered on its career as an independent university, and, no doubt, alterations may be made in its courses for the training of secondary-school teachers. But the general lines of training which have been followed for a good many years past will be adhered to. Hitherto the training has been in relation to the Teachers' Diploma of the Victoria University, and for the coming session the new university has adopted the regulations for that diploma. The diploma is accepted by the Board of Education as a qualification for admission to Column B of the Teachers' Register, and, conjoined with a degree, as a ground for issuing the Elementary School Teacher's Certificate. Whatever changes may be made in the diploma in the future, its standard of requirements will not be reduced. The examination is only open to graduates or persons qualified to become graduates.

The course of study may be completed in one year, but students usually derive most benefit when they are able to take a small portion of introductory theoretical instruction conjointly with their academic studies during one previous year of the undergraduate course. This is not, however, *essential, and for those* who have had some previous experience in teaching is less important than for others. Probably quite half the students who have taken the diploma have confined their studies in education to one post-graduate year.

When the whole course is taken in one year, students are expected to devote practically their whole time to the work. The lectures occupy from eight to ten hours a week, and are all given in the university buildings. They include courses in the psychological, ethical, and logical bases of education, in general educational theory and history, in certain special set books, in school hygiene, in discipline and organisation, and in general and special methodology with reference to the subjects taught in secondary schools. The teaching in special method is kept in very close touch with actual practical work in schools, and is made of as individual a character as possible.

In connexion with the Day Training College there are classes in physical exercises, in blackboard drawing, in nature-study, in general elementary science, and in voice production and music, which students preparing for teaching in secondary schools may attend on payment of small fees.

The practical training in teaching is given partly in primary and partly in secondary schools. In the former the teaching of the more elementary subjects can be efficiently studied, and the students more readily acquire the power of managing a large class. In the latter the methods of teaching more advanced subjects and of dealing with older pupils are more effectively practised. Each student takes charge of certain subjects in a form for a term, draws out a syllabus for the term's work in consultation with the head teacher of the school and the staff of the training college, prepares and writes notes on the lessons, and teaches under the supervision of both the school teachers and the college staff. As a rule, a minimum of three half-days a week for two terms is spent in the schools, either in teaching or in watching the teaching of others. Students who take the whole course in a year do not begin school work in the first term unless they have had some previous school experience, as it is believed that the school practice should be the application of principles, and the first term is consequently given to class-room study of such principles. But students who have taught before, or who have taken a year's course of lectures in the theory of education previous to beginning the full training course, practise in school during the whole of the session. In addition to this regular practice work, students attend the weekly criticism lessons of the training college and join in the critical discussions which follow the lessons. These discussions are directed to constructive investigation of how such a subject could be most efficiently taught to such a class, rather than to destructive criticism of the lesson which has actually been given. Each student also regularly gives lessons which are fully discussed afterwards with a member of the college staff.

The General Diploma Course is the one taken by most students, and its aim may be said to be

ıration of the form teacher rather than of
alist, though, of course, students for the
diploma are more or less specialists in the
they are able to teach. It is, however,
to take in addition various special di-
:he characteristic of which is that each
evidence of special knowledge in the
ffered, and special training in the methods
ng the subject. Hitherto students have
ɛ work for the ordinary diploma sufficient
r, and the special diploma has only been
y a very small number.
ıniversity library contains nearly 300
education, and students are expected to
ely in connection with the courses of
There is also a small collection of school
ɛs which it is hoped to enlarge, and, by
:ion of apparatus, &c., to convert into a
ıcational museum.
'raining Department is under the general
of Prof. Welton. The university has
ɛ vacancy in the Mistresship of Method,
y the resignation of Miss J. Emmerson,
ıppointment of Miss H. Robertson, who
ɔme years been in charge of the training
ɛrs at the Bedford College, London. Miss
ɪn will have special supervision of the
tudents. In addition, the staff consists of
P. Welpton, Assistant Lecturer in Educa-
. Miss E. Melville, Assistant Mistress of

ɛssion begins on the 1st of October, and
ut the 30th June. The fee for the year's
is £14 14s., and that for the examination
If a student adds to the general diploma
special diploma course, a small additional
d be charged—probably about £5.

PUBLIC SCHOOL MUSIC.

Union of Directors of Music in Secondary Schools.

those who can cast an eye over the
ɛvelopment of music in England during
ıe last fifty years it is possible that no
vill seem more far-reaching in its effects
altered attitude assumed towards the art
nen, as distinct from the women, of the
. classes. The present writer has been
a musician now alive, that at a concert in
where the said musician was present as a
ıan, the appearance of a male pianist on
orm was the signal for a storm of hissing
val, so effeminate did such a thing appear
ındergraduate of the period. That the
man has so far changed as now appears
an effect due to specific causes; and even
ɔerficial observer it will quickly become
:hat the corresponding change of view
evident, during the same period, in the treatment of music at our large public schools must prove in the end to have been one of the most active influences at work. For any elderly man of the present day who was educated at a great school will tell us that in his time not only was the number of boys desirous of learning music exceedingly small, but that even to those who *were* desirous the opportunity of learning was practically non-existent.

Now let us see in what manner the art is treated at the present day. In the first place, most of our great schools have now equipped themselves with "music schools," or special buildings where music is isolated from other studies and taught with all the advantages of definite concentration. The first of these buildings was probably that at Harrow, not yet twenty years old, and this has formed a model, with the improvements suggested by experience, to Eton, Winchester, Rugby, and numerous other schools. Secondly, at every school of importance nowadays there are musical directors, in whose hands the management of all musical affairs rests, and these men are drawn from musicians of such standing that any musical boy will be certain of receiving instruction of a high character. Men like Dr. Harford Lloyd, once organist of Christchurch Cathedral, Oxford, and now at Eton; Dr. Sweeting, who left St. John's College, Cambridge, to go to Winchester; Dr. Buck, once of Wells Cathedral and now at Harrow; Mr. F. C. Woods, of Highgate; Mr. Peppin, of Clifton; and Mr. Basil Johnson, of Rugby—all men with the Arts' degrees of their university to supplement their musical attainments—go to prove not only that public-school men have entered the musical profession and taken a high place in it, but that the school authorities of the present day have thought music so important that they have attracted these men to come and take charge of it.

Lastly, how have the boys themselves responded to these opportunities offered them? The answer must be that, in all probability, it is the demand of the boys and their parents that has caused the ultra-conservatism of the public school finally to give way. There are, of course, contributing causes, of which the two most obvious are: (1) the necessity of providing bands for the now universal cadet corps, and (2) the common custom of having school concerts; but, whatever the various causes may be, it is a fact that the demand for musical instruction amongst boys is at present so great that we are within the mark in saying that in many schools over thirty per cent. of the boys take private lessons in music. And, in addition to these private lessons, almost every school has its choral society, choir, orchestra, corps band, and harmony class; and some, though unfortunately not all, house-singings and an *ensemble* class.

The fact that this development of music has been going on steadily for thirty years and more in our schools, great and small, has of course created a class of men who hitherto had no *locus standi* in the musical profession; men, that is to say, whose sole business in life is the direction of the musical

activities of the schoolboy. This class has been gradually growing and developing, and has in recent years acquired the consciousness of being an entity; and, consequently, steps were immediately taken—as is always the case in England—to form a society for the purpose of bringing this scattered body of men together at least once a year, thereby exchanging views, comparing systems, reading papers, and generally stimulating one another. Under the generalship of Dr. Rowton, of Bradfield, all the many difficulties of organisation were overcome, and music masters met in London informally for three years, at the old buildings of the Royal College of Organists, and

MR. W. S. BAMBRIDGE,
President of the Union of Directors of Music in Secondary Schools.

under the chairmanship of Dr. Lloyd, of Eton. Having in these three years assured themselves that there was a value in such meetings, a fourth meeting was held on April 29th, 1903, at which a constitution was formed. The name taken was "The Union of Directors of Music in Secondary Schools." The first president was, naturally, the founder, Dr. Rowton; a committee, representing seven great schools, was elected; and in a short time the membership, for which an annual subscription of 3s. 6d. was fixed, reached to nearly one hundred. That first formal meeting was marked, too, by the reading of a paper on "Ideals in Music Teaching," by Mr. A. H. Peppin, of Clifton College, which will long be remembered as a contribution of quite unusual depth and originality. This was reprinted in the *Musical News*, and afterwards read, by request, at the first mee similar union of music teachers in girls' s

The second annual meeting of the U held this year at the Holborn Resta April 26th, and, in the course of a long sitting, a great deal of interesting work through. There were two papers read which have been reprinted since in the *Mu* The first was by Mr. E. L. Price, College, on "The Voice Problem," and that question which is the *crux* of all sch societies, viz., the breaking voice. A followed, in which various views were ex and a general feeling expressed that at time the question should come up aga second paper, "A Simple Method of Sight-reading," by Mr. Pile, of Sedbeig attempt to illustrate a system, successfull the reader in his own singing classes, of the simpler points of the Tonic-sol-fa notation. Both papers presented new i thoughtful manner. In "private busines valuable scheme was presented by M Johnson, of Rugby, and approved by the whereby any music master could ar receive, through a central exchange at R programmes of concerts at other s exchange for his own. Some forty mem availed themselves this year of the sy each will send forty programmes, and return those from the other thirty-nin To any one who has to organise termina the suggestions and help to be derived plan is incalculable, and it is also more t that an impetus will be given towards such programmes up to a high level. also being taken to sift the question songs, and of issuing a list of music su teaching which has already proved to table to boys—the latter an incalculal only to be discovered after much ende many failures.

If we have seemed to treat this subject music somewhat seriously, it need only b out that it has a vast influence on the music in England. That, even now audiences are mainly composed of wom that men have not realised that one of pleasures of life is a sealed book to them undoubted proof that those teachers to musical instruction of our future men is are filled with an earnest wish to put thei a high and serious platform is a fact whi be equally welcome to those who merel art, and to those whose work it is to p the musical needs of the nation. Reali we wish the Union a large membershi unqualified success in attaining its most c able purposes.

It only remains to add that we have pl presenting our readers with a portrait o S. Bambridge (Marlborough School), the for the year, and that all desirous of joi only apply to the secretary, Dr. P. C. B row School, Middlesex.

RE STUDY AND THE STUDY OF NATURE.[1]

OLS, like drawing-rooms, are afflicted
n time to time by temporal modes and
ions, and, just as the latter a few years
esced into china cats and spotted dogs, so
ard and visible signs of nature study are
a evidence in most of our schools to day.
Study" may be correlated with "art"
and "art" pottery; the adjectival use of
tantive seems in either case to connote
arisation of a movement of great value
exists in the spirit of the individual, of
all when it is a cheap importation from
We could pursue the parallel still fur-
ly perhaps to the wounding of many
eople; the excuse for our little display of
nust be that, while we are devoted to the
which nature study should represent, we
ortionally distressed by the wholesale
of principle in the many books which
s guides to the teacher in this subject.
cational idea which was in the minds of
en who first pressed for the introduction
eaching bearing upon country life into the
course of every rural school was to get
l away from the region of text book,
rd and dogmatic statement, and to bring
e its own eyes and mind by working at
ings. Not only would such teaching be a
to the child's mental development, but
lly it would be a better preparation for the
of those children who remain in the
For town children the stupefying influence
ely verbal education does not matter so
hey early pass over to a narrow routine,
reer of posting bills day by day or mind-
rew-cutting machine can be prepared for
ell by the formal unrealities of grammar,
tain kinds of school arithmetic as by any
ay. But intelligence is necessary in the
nan; he may have charge of stock or be
d in a fruit plantation; even if he is not on
at all he will have an allotment, and much
se will depend on the skill with which he
v a portion of the family food; his work,
will be concerned with living organisms, so
will be continuously called upon to deal
foreseen occurrences. Hence the great
nce to the country child of a form of teach-
h will early bring his mind to work on the
and unexpectedness of the living world.
ver, the teacher is in a sense not concerned
y special preparation for the after career of
dren; his business is primarily to render
nds active and flexible; and it is from this
view that a system of teaching direct
ture can do so much to widen and vivify
nary school curriculum. The soul of the
; must, however, lie in the method and not
subject taught; observation, experiment,
and the orderly development of thought, must be the guiding principles of everything that is attempted. Let us see what these three principles involve. Observation does not mean merely noticing things, it means seeing with the mind and watching with a purpose; a child cannot be taught to observe by being told to go out and look at things; it must be interested first in causes, in the why and wherefore, then it will find out the how for itself. School rambles that result in a mere catalogue of things seen are of little educational value, they should be planned for the elucidation of some definite subject. Getting up descriptions of natural objects is still more worthless, often positively harmful as closing the eyes for good and ever to the real thing. For over a hundred years every child's book has contained a particular description of the mole's habitation; it was only the other day that one man succeeded in getting away from the pretty picture, and finding that the mole had been educated in some other school, and was not playing the game according to the rules of the text-book.

Observation best grows out of experiment, real experiment, where of set purpose a question is asked of nature and the pupil has to watch for the answer. On the all-importance of experiment we would insist and insist again, for on experiment depends not only the growth of observation and the development of the reasoning faculty, but the creation of a habit of mind flexible enough to try things for itself and not act only on authority. Lastly, the study of the living plant or animal secures development in the chosen subject, a sequence of events and a chain of causes and effects which extends over more than one lesson. Accurate recording and quantitative measurements of the state of the organism from time to time follow as a matter of course, both exercises of great value in themselves.

The subject chosen does not matter much; let it be one that chimes in with some hobby of the teacher; the essential thing is that it be restricted enough in its scope to admit of continuous experiment. Let us give an actual example. A teacher interested in basket-making planted sundry kinds of osier and gradually increased the collection as he began to make them the basis of a series of natural history lessons. The children learnt to discriminate between the various sorts by their leaves, their habit of growth, their mode of flowering. Continuous records were kept of the rate of growth of different sorts, development was studied again by propagating from cuttings and by raising seed. The insect enemies and other pests were watched and their life histories traced; the whole great range of plant physiology, classification, adaptation to environment, &c., was opened up by the careful study of this one kind of plant, not a very promising kind to the casual observer. Now the willow is not everyone's plant, so we cannot recommend any teacher to copy the above example, but we do insist on the necessity of copying the method—observation, experiment, development—the point of application is of minor importance.

[1] Study and Fairy Tales." By Miss C. I. Dodd. 206 + viii. pp.

These remarks seem uncommonly like truisms; they could not be more neglected if they were eternal truths. For example, there lies before us a little book of instructions to teachers of infant schools called "Nature Studies and Fairy Tales." As to the fairy tales we have nothing to say, except that we thank our gods that we belong sufficiently to the early world to have had our fairy tales "neat" and not mangled into an Herbartian symmetry of (1) Preparation, (2) Presentation, (3) Association, (4) Formulation, (5) Application. Applied to natural objects such a scheme inevitably results in the neglect of the true spirit of the work for the form of the lesson. For example, model lessons are given on the primrose and the cowslip taken separately; the systematic observation, as it is called, is dictated by the teacher and becomes a mere exercise of memory, because there is nothing to give the facts a meaning. The process is repeated for the cowslip, and the notes which have been drawn up for the two flowers are then compared. Now, trivial as the matter may seem for heavy discussion (we are dealing with object lessons for infants only), we maintain the lesson sets to work in the wrong way; the teacher is laying down the law and the child is absorbing information, not learning to use its own eyes and mind. The better way would be to give the children both cowslip and primrose plant, and let them work out the likenesses in unlikeness for themselves, the teacher's skill consisting in suggestively keeping the observation in progress and in order. Once the points have been seen, exercises in description either verbally or by the brush become possible. Of course, it may be argued that every school cannot obtain primrose and cowslip plants at will: very well, then, let something else be chosen for the lesson: unrealities of all kinds creep in as soon as the work is removed from the actual. We could point to an odd mistake or two in the few lessons here set out; trifling matters enough, but why *tell* the class anything, right or wrong; the object of these lessons is not to convey information but to put the pupil into the way of acquiring it. Nature study will never become the study of nature unless the teacher can subdue his ingrained desire to provide people with facts, and by sticking close to the paths of experiment conquer the old Adam in him to the extent of letting the facts grow.

A. D. H.

THE summer course of Nature Study, held at the Horticultural College, Swanley, from August 1-13, proved very successful. Particulars of the course were given in a letter from Miss Sieveking, the Honorary Secretary of the College, published in our issue for July. It was hoped that perhaps twenty-five students might attend the course, but as a matter of fact fifty-four presented themselves and benefited by the demonstrations. Ten of the students were holders of Worcestershire County Council Scholarships, and a great majority of the students are engaged in teaching. It is hoped to make a summer course of nature study an annual event at Swanley.

MODERN INSTRUCTION IN ART.

IF we turn from the perusal of that wonderful exposition of first principles, Ruskin's "Elements of Drawing," to the consideration of any group of recent books dealing with the same subject, we cannot but experience something of a shock, so acutely must we realise the change that is coming over the spirit of art education as it is now being set forth for the use of students and teachers. The specialisation that is taking place, the splitting up of the subject into a number of special studies with distinct titles each demanding its explanatory volumes, overwhelms us with subtle niceties of educational refinement wholly differing from that stimulating simplicity and intense concentration on the realisation of truth demanded by the greatest of our drawing masters.

There are legitimate subdivisions of so comprehensive a study as art; we cannot commence by considering all the complex problems it presents at once. But the present lamentable tendency to teach pupils to acquire the power of performing tricks with a brush, or of swinging a piece of chalk round in a prescribed curve, in order that they may become efficient in what is after all a mere manual dexterity, and to call these exercises "art work" is surely greatly to be deplored. The point of view of the Ruskinian method, the carefully graduated scheme of observation and the proper expression of facts observed, by the aid of the examination of the practice of great masters being lost sight of in present-day teaching.

One of the great difficulties that hampered the earlier followers of Ruskin is rapidly disappearing. The multiplication of inexpensive reproductions of examples of fine art has placed materials, unknown in the early days, in the hands of teachers. But whilst we have on the one hand an increasing body of workers critically and diligently examining and explaining our heritage of art treasures, and publishing the results of their labours at a price that places their work well within the reach of all serious students, we have on the other a number of teachers who pay little regard to the opportunities thus opened out to them. Reproductions and photographs of the finest things all over the world are to be had quite cheaply. Thanks to an enterprising publisher, we can now get a copy of Turner's *Liber Studiorum* for half a guinea, and the "Elements of Drawing" itself costs but a trifle.

The two main types of book that appeal most directly to the art teacher are, first, that which deals with methods of study, laying down a properly developed and illustrated scheme of work; and, secondly, that which supplies him with examples of historical or traditional art for the purpose of study. Books of the first type are useful to the inexperienced teacher who begins work upon a more or less ready-made plan, and they also afford useful hints to those who are able to arrange their work for themselves. Now and again, perhaps every hundred years or so, a really

at work of this category appears, going simply l clearly back to first principles. Books of the ond type are the indispensable requisite of every cher and student; fortunately this form of book, ich is so largely extending the art workers' ck-in-trade of traditional examples is now lergoing an interesting development.

There are examples of both these classes in books now under consideration. In Mr. J. ughan's[1] volume we have part of a carefully pared "Teachers' Handbook of Drawing, sign, and Manual Occupations." The author the introduction rightly insists on the value drawing as a means of education, and he is eful to lay due stress upon the necessity of tient, methodical drawing. But he apparently gards drawing rather as a form of handwork in re or less intimate connection with various ds of manual training than as a means of quiring a knowledge of art. Written from this int of view his book will appeal more to the anual instructor than the art master. An introction discussing the place of drawing and other anual occupations in primary education is llowed by a careful summary of the whole scheme work advocated, of which this volume details e fourth stage. There are chapters on drawing, e drawing, drawing from objects, brush drawing, t tinting and modelling in clay and cardboard, d working to scale. The book is fully illustrated th twenty-four full-page plates and fifty-five awings and photographs in the text.

Is Mr. Cadness's book on Design[2], the second tion of a manual for the use of teachers and dents in elementary, secondary, and technical ools? A certain amount of design work no doubt, a necessary supplement to the work a drawing class, calling into play ability in wing and observation, and using them for a w purpose. It too often falls into the hands of a cher who is a draughtsman only, and teaches sign as he imagines it to be without any earnest ort to find out what it really is. The author s given, in his forty-two plates, a number of storical examples, including some photographic productions of pages of fine illuminated manuripts in the British Museum. After a useful troduction on the tools and materials used in the reparation of working drawings for patternesigning of various kinds, etc., come chapters on ethods of expression, elementary forms of rnament, natural forms, influences in style and pplication of study. We cannot but feel, however, that there has been an attempt to crowd too uch into the pages of this little volume. Had he author confined his work within more strict mitations he would have done himself and his bject more justice than the limited space at his sposal allows. The number of illustrations has so resulted in many being lamentably crowded gether.

Mr. Stanley Thorogood[1] would have done well had he included some photographic reproductions of a few complete specimens of Persian plates or tiles, Greek vases, &c., in his collection. The isolated fragments that he gives from these sources are hardly impressive enough, and lack the masterly directness of the originals. They are overmuch tarred with the same brush, if we may use the expression, that has produced some of the very "new art" designs that disfigure the earlier part of his volume.

Many teachers will find "Geometrical Design"[2] a most useful help to the application of geometrical drawing to decorative work. It contains a clear, well-reasoned exposition of geometrical design. Commencing with very good definitions of various types of patterns, the author goes briefly over the principles of arrangement, analysis of pattern, &c., before plunging into a graduated course of interesting work. He has had examination questions perhaps a little too prominently in his mind, but has not allowed himself to be led astray thereby. The illustrations are well selected and suggestive.

The value of a trustworthy series of historical portraits of great men for use in school drawing-classes is evident, but it is to be doubted whether Mr. H. H. Stephens would not have improved his collection[3] both from the historical and artistic points of view if he had photographically reproduced his originals instead of re-drawing them with a rather insipid outline. Each portrait is accompanied by a short biographical notice and a statement of the source from which it is derived.

The author of "Complete Clay Modelling"[4] has provided a course of instruction in simple modelling, much of which is very suitable for children's classes. His course includes simple exercises in the manipulation of clay with fingers and tools, modelling of common objects, bells, books, &c. There are also chapters on geographical modelling and making plaster casts by various processes. The illustrations are not attractive, but serve to illustrate the methods described.

The "Nursery Rhyme Tracings,"[5] from the same publishers, are outlines intended for small children to colour with crayons or water colours. This is a capital elementary exercise. Children cannot be introduced at too early an age to finely drawn and coloured pictures such as Walter Crane's or Caldecott's masterpieces and Tenniel's "Alice" illustrations. It is needless to say that the drawings under consideration do not come up to the level of these classics, being, in fact, sometimes very ill-drawn. The "Nature-Story

[1] "Nelson's New Drawing Course. Stage IV." By J. Vaughan. pp. (T. Nelson and Sons.) 2s. 6d.

[2] "Decorative Brushwork and Elementary Design." By Henry dness. Second Edition. xiv. + 184 pp. (Batsford.) 3s. 6d.

[1] "The Manipulation of the Brush as Applied to Design." 3rd Edition revised and enlarged. 16 pp. + xlviii. plates. (George Philip and Son.) 4s.

[2] "Geometrical Design." By a Drawing Inspector. 2nd Edition, revised. 44 pp. (Arnold, Leeds.) 2s.

[3] "The Freehand Outlines of Famous Men." By H. H. Stephens. Four books, each containing 12 portraits. 2d. each. Or in two packets of 24. 1s. 1½d. per packet. (Arnold, Leeds.)

[4] "Complete Clay Modelling." By the late William Reid. 172 pp., including xci. plates. (Arnold, Leeds.) 4s.

[5] "Nursery Rhyme Tracings." Two books, each containing 6 copies, 2d. each. (Arnold, Leeds.)

Studies,"[1] outlines bearing such titles as "In the Meadows," "Blackberrying," &c., are evidently destined for a similar purpose, and share the same defect.

CRETAN EXPLORATION.[2]

MR. EVANS still marches on his triumphant course at Knossos, and each year as it seems brings discoveries which are new in kind. This year there is not so much to remark in the structural arrangements of the palace; although a great deal of light is thrown on details, and the "theatral area," with its wide steps, is a fine spectacle. But the finds are of great interest. A large number of new store-pits have been found and opened, and their contents have proved to be of a very varied character. Besides gold-leaf, faïence objects, pottery, bronze, and such like articles, indications have been found that some of them were used for storing oil. Doubtless they were used to store everything that could be stored. No large deposits of documents have come to light, but there are a quantity of seal impressions which are interesting. A great number of vases were discovered, both of bronze and earthenware; one bears a scene upon it in which a man in a boat appears to be fighting with some monster of the deep. But the chief interest lies in a large shrine, containing in pits a collection of remarkable objects. A female statuette, 13½ inches high, depicts apparently a goddess, wearing a cap about which a serpent is entwined, and two more serpents about her waist. Another figure, assumed to be a votary, holds out a snake in either hand. A number of reliefs in faïence show animals milking their young. Amongst many votive offerings of less interest are certain articles of dress made in faïence; a unique find. Representations of fish and shells and other natural objects show a wonderful skill. Lastly, a marble cross was found, to which Mr. Evans attributes a ritual significance and connects it with the stars. Excavations at another Cretan site, Paleokastro, are hardly less interesting for students. Here a votive deposit was uncovered containing male and female figures, and models of limbs and parts of the body; such models do not appear in historic Greece until the fourth century.

The volume contains a number of other papers of interest. *Notes from Karpathos* give information about the present state of a little-known island. Mr. Wm. Ramsay, the veteran geographer, describes new discoveries in Pisidia and Lycaonia. Greek art, and especially Alexandrian, is the subject of the paper on *Apollo seated on the Omphalos*; epigraphy is represented by *An Unpublished Attic Decree*. Even the ladies who know no antiquities will be interested in Mr. J. L. Myres's criticism of fashionable female dress in the Minoan age.

Altogether this volume is no less valuable than its predecessors. We hope that it may have a large sale, and induce many intelligent persons to subscribe their guineas in aid of Cretan exploration.

ELIZABETHAN SONNETS.[1]

THESE two volumes of the revised "Garner" contain the sonnet sequences which appeared in that work, together with three new items: Thomas Watson's "Tears of Fancie, or Love Disdained" (1593), Thomas Lodge's "Phillis Honoured with Pastoral Sonnets, Elegies and Amorous Delights" (1593), and Edmund Spenser's "Amoretti and Epithalamion" (1595). The contents of the volumes are, as usual, of unequal literary merit; they are, however, interesting historically if not always as poetry, and, since they have nearly all been long accessible in their old form, we need say no more here of their merits. But Mr. Sidney Lee's introduction deserves a more detailed notice.

In this introduction the editor breaks new ground. He has studied the continental literature of the period, and has found that quite a large proportion of the English sonnets are simply translated from the Italian or the French. The influence of Petrarch in this department was enormous. He fixed the strict sonnet form, which was largely followed by his imitators, although in England the sonnet took the slightly modified shape which is most familiar in Shakespeare, with a rimed couplet at the end. Once familiar, the form became such a favourite that the number written in Western Europe in the sixteenth century has been estimated at more than 300,000. The earlier sonnet-writers in England were inspired from France rather than Italy. But from the first Petrarch was the fountain from which many drew. In Tottel's "Miscellany" (1557) were a number of sonnets, chiefly by Wyatt and Surrey, many of them directly translated from Petrarch. Mr. Lee enumerates thirteen of Wyatt's, out of a total of thirty-eight, which are drawn from this source. The real starting point of the sonneteering vogue was, however, the work of Watson, Sidney and Spenser, who owed much at first to the French followers of Petrarch. Watson, more frank than some of his fellows, indicates in each poem the original which he has imitated. Sidney's renderings are more paraphrase than translation. It was his "Astrophel and Stella" which set the ball rolling in earnest. Samuel Daniel owed much both to France and Italy; but

[1] "Nature Story Studies." 16 sheets in packet. (G. Philip and Son.) 6d.

[2] "The Annual of the British School at Athens." ix. + 422 pp. Seventeen plates and 149 illustrations. (Macmillan.) 21s.

[1] "Elizabethan Sonnets," newly arranged and indexed, with an Introduction by Sidney Lee. An English Garner. cx. + 316 pp., vi. + 448 pp. (Constable.) 4s. each net.

he conceals his debt, and has gone for three centuries in borrowed plumes until Mr. Lee came forth to pluck them. Mr. Lee here prints several of the sonnets and their originals side by side, and readers will be astonished at the exactness with which Daniel translates.

Similar criticism applied to Constable, Lodge, Bonner and Fletcher discloses similar debts; but the full extent of them can never be gauged until the contemporary French and Italian literature has been studied with this in view. Lodge was a great reader, and his debt was probably greatest; he is especially fond of Ronsard (here again Mr. Lee prints six typical specimens for comparison), but he probably neglected none and used most of the French lyrists of his day, not to speak of the Italians. He held his peace, however. Barnaby Barnes was another prolific translator, who forgot to make acknowledgments. Drayton went further and disclaimed imitation, but without ground. Even Spenser himself is steeped in foreign poetry, and many of his imitations are traced here. When the great spirits act thus we may expect the lesser to follow in their track.

The reader will see that Mr. Lee has hit on a new line of study which, however humiliating to our national feeling, will be welcome to those who love truth first. There is evidently scope for much solid work on these lines. The volumes of verse of which we are speaking gain greatly in value from Mr. Lee's able preface.

DESIDERIUS ERASMUS.[1]

ERASMUS holds so commanding a position in the world of letters that anything from his pen must arrest the attention. Especially is this the case in educational matters; for his originality and keenness of insight enabled him to see through the husk to the kernel, through the formalities of his own age to the eternal principles of human training. The present work is most opportune at a time when the modern world is asking for guidance, and when attacks are being made upon the literary studies which have for so long time formed the staple of a child's education. If, in Erasmus's day, the pursuit of natural science and mathematics was not important enough to challenge the literary citadel, yet Erasmus himself was free from prejudice and willing to criticise. His views are based on reasoning, which is not always the case now with the advocates of either side.

Prof. Woodward prefaces his book with an interesting sketch of the author's life, based on a study of the best authorities. His next section, called "Characteristics," discusses the author's relation with antiquity, and his attitude towards the Ciceronians and the vernacular tongues. Here Mr. Woodward shows that Erasmus was a practical man, devoted to study, but regarding study as a means to an end, "wisdom and scholarship as means to social well-being." He has little sympathy with imaginative poetry or ideal philosophy: "the world of Pythagoras, Aeschylus, or Plato is all but closed to him." Latin he uses as a living language, not to be trammelled in the bonds of classical usage, but not to be disfigured by unnecessary mediaevalism. His own style is clear, idiomatic and racy; no slavish imitation of a Cicero or a Livy. Having this fine instrument at his command, he cared nothing to master the modern vernacular, even Dutch, French, or English. As a school subject, modern languages, in his view, are of no value: they lack definiteness and uniformity of structure. He also despises national tales and traditions, as he regarded the national spirit itself as an evil. The "Educational Aim of Erasmus" forms the subject of the third chapter. The "Beginnings of Education" and the "Liberal Studies" conclude the first part. He has a very high standard, moral and intellectual, for the teacher, and is amazed that his pay is less than that of a cook. In this respect we have not advanced far beyond the age of Erasmus. The school subjects then occupy his attention; and there is much that is useful in his remarks on which we cannot now linger. The second part of the book consists in translations of "De Ratione Studii," "De Pueris," and part of one of the "Colloquies," and a chapter from "De Conscribendis Epistolis" in Latin.

With certain limitations, due to the state of knowledge in his age, Erasmus is surprisingly ahead of his age in many respects. Like Comenius, he held that education should begin in the nursery. Erasmus is properly careful of health and good companionship. His idea of discipline, with the very young, is rather to win than to drive. Unlike the contemporary pedagogue, he refused to countenance severe floggings and punishments. To provide competent teachers was the duty of church and state combined. The importance of language and literature is everywhere insisted upon; and the practical advantage of ancient synthetic languages over the modern, with the important proviso that Latin, at least, should be taught colloquially.

Prof. Woodward has done his work well; and students will be grateful for the useful bibliography which is appended.

1 "Concerning the Aim and Method of Education. By W. H. Woodward, Professor of Education in the University of Liverpool. xvii. + 244 pp. (Cambridge University Press.) 4s. net.

A UNION, having for its object the advancement of Music in secondary schools for girls and the discussion of matters connected therewith, has been formed. In order to promote intercourse between teachers and provide a stimulus to musical activity, it is proposed to hold periodical conferences in London open to all members of the Union, at which papers, followed by discussions, will be read by distinguished musicians. The next conference will be held at 6, Upper Baker Street, London, on October 15, at 3 p.m. Full particulars can be obtained from Miss Cecilia Hill, The Cedar House, Salt Hill, Slough, the Hon. Sec. of the Union.

A SURVEY OF ENGLISH EDUCATION.[1]

THE inclusion of education among the various sections of this Association for the Advancement of Science is sufficient evidence that a new educational era has begun in this country. Whatever may be the defects of our educational system or want of system, whatever changes may be necessary to bring it, in the current phrase, up to date, the days of unthinking tradition are over. Scientific method is entering on its inheritance, and it has begun to include the field of education along with other fields of life and thought within the sphere of its influence. And scientific minds are asking on every side of us what is the end of true education, and are we on the right way to it?

True education, almost insuperably difficult in practice, has been often defined in words. Plato told us long ago how it is music for the soul and gymnastic for the body, both intended for the benefit of the soul, how it is a life-long process, how good manners are a branch of it, and poetry its principal part, though the poets are but poor educators, how great is the importance of good surroundings, how the young should be reared in wholesome pastures, and be late learners of evil, if they must learn it at all, how nothing mean or vile should meet the eye or strike the ear of the young, how in infancy education should be through pleasurable interest, how dangerous it is when ill directed, how it is not so much a process of acquisition as the use of powers already existing in us, not the filling of a vessel, but turning the eye of the soul towards the light, how it aims at ideals and is intended to promote virtue, and is the first and fairest of all things.

In this description, I take it, we most of us agree, though some of Plato's views would doubtless elicit differences of opinion amongst us, as, for instance, that education ought not to be compulsory, or that it should be the same for women as for men.

One of his statements may be soothing to our English self-complacency, for, as is the habit of idealists in every age, he says that even in Athens they care nothing for educational training, one of the most brilliant of their younger statesmen pleading that it does not matter, because others are as ignorant as he. Or again, our own Milton sums it up in fewer words, but very impressively, when he says true education fits a man to perform justly, skilfully, and magnanimously all the offices, both private and public, of peace and war. It is a noble aim which he thus sets before us, to make our sons skilful, just, magnanimous, and every description of aims and methods can be little more than an expansion of it. Of the importance of right aims and ideals there can, as Plato reminded us, be no question, because of the danger of ill-directed aims, and the lasting nature of early impressions.

What we learnt at school, when all the world was young to us, whether we learnt it with weariness or pain, or under happier influences with a quickening pulse and the glow of enjoyment, passed into the blood, as Stevenson said somewhere, and became native in the memory. True education, then, as we all acknowledge, aims at cultivating the highest and most efficient type of personality, men not only appropriately and technically equipped for their professional business, but men endowed with the best gifts and inspired with high purposes, men who desire to follow the more excellent ways and to lead others in them, who love knowledge, truth, freedom, justice, in all the relations of life, whether individual or social, men marked by sense of duty and moral thoughtfulness, public spirit, ar strength of character.

Such an education is the true basis of individual and natio welfare, and experience has abundantly shown how necess this is to save men from distorted views of history, from wro conceptions of patriotism and public duty, from mistaken a and disastrous policy. Thus, for instance, a good and t education shows us that the true basis of life is moral economic, and not military, and the true aim of both i viduals and nations is knowledge, justice, freedom, pe magnanimity. and not pride, aggression, force, or greed.

Scientific consideration of our subject will of course d largely with such details as the relative claims of the humar and the realist, subjects and methods of instruction, the cor lation of different grades of education, the adaptation of this that system to special needs, and so forth; but through all t these fundamental requirements of the true education, placarded before us by Plato or by Milton, must always hc the chief place, and all others must be kept in due and conscic subordination to these.

I am profoundly convinced that our English education ne the influence of more light and more thought from every quart and especially from those who are familiar with scient methods. "Blessed are they that sow beside all water Moreover, I hail the application of scientific intelligence a scientific methods to this subject, because, looking back, I a profoundly conscious that I should have done my own edu cational work far less imperfectly if in my youth I h undergone any rational scientific illuminating preparation for In such a process I should have lost no personal gift or aptitu that I possessed, and I should have gained some early knowlec and confidence and power which would have saved me mu discomfort and anxiety and some mistakes and failures, a would have saved my pupils some loss, and possibly so distress.

When I turn with these thoughts in my mind, and look c over the field of English life, I see very strong and va reasons why our education, its merits, its defects, its meth and results, should be seriously considered here, as also in v different assemblies elsewhere. Above all, the persisten traditional and unscientific spirit that still pervades so much from top to bottom, its lack of reasoned reflection, demands special attention.

"The want of the idea of science, that is of systematic knc ledge," said Matthew Arnold, "is, as I have said again again, the capital want at this moment of English education English life. Our civil organisation (including our educatic still remains what time and chance have made it."

This was written about thirty-six years ago, and it is, to the least, a surprising thing that in an age of unusually ra scientific development it should be, in the main, still so true, it undoubtedly is, of a great part of our English educatio system.

There is the lack of any systematic preparation for the b ness of teaching which still prevails throughout our middle upper-class education, although here in Cambridge and Oxford some excellent pioneer week is being done in the tra ing of teachers. There is the general lack of interest in e cation which is still so noticeable in a great deal of Eng society of all grades, the spirit of indifference to it, and even tendency to depreciate the intellectual life. There is the cessive influence of tradition and routine on our great sch and universities, and in some quarters an inert or suspici conservatism. There is throughout our middle-class educat a state bordering on chaos, a country largely unexplored mixture of things, good and bad, involving a vast amc of wasted opportuity and undeveloped faculty. Even

[1] Abridged from an address to the Educational Science Section of the British Association for the Advancement of Science, delivered by the Right Rev. the Lord Bishop of Hereford, D.D., LL.D., President of the Section, at Cambridge, on August 18th, 1904.

elementary education, which has received the largest share of public attention, there is much that needs to be done in a more thoughtful and scientific spirit. Party politics have to be eliminated as far as possible, especially ecclesiastical politics.

The fitness of a great deal of the teaching to the special needs and requirements of the children has to be considered afresh. The tendency to overlook the interests and the attainments of each individual child has to be checked. The wastefulness of our absurdly truncated system of elementary education stopping abruptly at about twelve years of age and then leaving the children to drift away into an unexplored educational wilderness has to be superseded by some rational system of continuation classes made obligatory. Truly the harvest is a plenteous one for those who desire to uplift our English life by helping forward the best modes of educating the rising generation in a scientific, or, in other words, a wise, intelligent, and large-minded spirit.

Much, it is true, has been done in almost every part of the educational field during the last half-century, but not nearly so much as ardent friends of education anticipated forty years ago. I have already quoted some significant words from Mr. Arnold's illuminating Report on the Schools and Universities of the Continent as he saw them thirty-seven years ago. If that report had been turned to immediate practical account at the time, if some English statesman, like William von Humboldt, had been enabled with a free hand to take up and give effect to Mr. Arnold's chief suggestions, as Humboldt and his colleagues gave effect to their ideas in Prussia in the years 1808 onwards, the advantage to our country to-day would have been incalculable.

In our insular disregard or depreciation of intellectual and scientific forces actually working in other countries, we have undoubtedly wasted some of that time and tide in human affairs which do not wait for either men or nations.

But, putting regrets aside and turning to some of the practical problems that seem to confront us to-day, I venture to put before you for consideration such cursory and unsystematic observations or suggestions as my personal experience has led me to believe to be of practical importance. For more than this I have no qualification.

In the first place, the growth of crowded city populations and the conditions under which multitudes have for at least two generations been growing up and passing their lives in our great cities have set us face to face with the very serious preliminary problem of physical health. If our physical manhood decays all else is endangered, so that the first business of the educator is to look well to the conditions of a healthy life from infancy upwards. Hence the great educational importance of the petition presented by 14,718 medical practitioners, including the heads of the profession, to the central educational authorities of the United Kingdom.

This petition, coming, as it does, with all the weight of the medical profession, as the expression of their experience and conviction, is, to my mind, one of the most important educational documents which have been published in our time, and it can hardly be disregarded without incurring the charge of folly.

The Greeks, as we are constantly reminded, in the great period of their creative influence, found nothing so absorbing as the things of the mind; a pre-eminent characteristic of their life was their love of knowledge, their fine curiosity, their enjoyment of the things of the imagination and of thought. It has been noted that what specially conciliated an Athenian voter was the gift of a theatre ticket; and this is a very instructive and significant fact when we bear in mind that the theatre was the great teacher of religion, morals, poetry, patriotism, all in one; that it combined the influences of Westminster Abbey, the plays of Shakespeare, and the heroic achievements of the race; whereas to an ordinary English voter these things are too often only as caviare to the general.

If so, our education has before it the task of doing what can be done to alter this; and from the Greeks we may derive both lessons and warnings. It was in the days when this decadence was beginning that their excessive admiration of the professional athlete, what we might call their athletic craze, called forth the bitter gibes of Euripides, and his impressive warnings and exhortations to admire and to crown with their highest honours, not those who happened to be swiftest of foot or strongest in the wrestling bout, but the man of sound mind, wise and just, who does most to guide others in the more excellent ways, and to uplift the life of his community:

ὅστις ἡγεῖται πόλει
κάλλιστα, σώφρων καὶ δίκαιος ὢν ἀνήρ.

Here we have a warning by no means inappropriate to our own life and its tendencies. It is, indeed, high time to bring serious and, let us say, scientific thought to bear upon the whole matter.

Taking first the elementary school, it is to be noted that our system does too little to draw out and stimulate the faculties or to form the tastes of each individual child. Classes are still in many cases far too large. The system of block grants, being inadequately safeguarded or supplemented by inducements to individual children to apply and prepare for certificates of merit or proficiency, however attractive it may be to inspectors and teachers, needs to be very carefully watched in the interests of individual children. The individual child requires the hope and stimulus of some personal recognition or distinction, if its faculties are to be fully roused and its tastes properly cultivated.

Moreover, the aid of scientific thought and experience is needed to bring both the subjects and methods of instruction into closer and more vital relationship with the environment of the children and with their practical requirements, and more weight has to be given to specific ethical teaching, that moral and spiritual training day by day, which has for its end the development and strengthening of character, and taste, and issues in conduct, which is the greater part of life.

And seeing that it is of the essence of any rational or scientific system to avoid needless waste, it is time that our elementary education should no longer be left in its absurdly truncated condition, which allows a child's education to be stopped abruptly and finally at or about the age of twelve, when in the nature of things it should be only beginning. As things are at present, just when the parent of the upper classes is anxiously considering what school will be the best for his son, a vast number of the children of the poorer classes are left by the State to drift out into a wilderness where all things are forgotten.

In this connection, however, it is due to the Board of Education that we take note of the reminders lately issued in the Introduction to the New Code and the memorandum prefixed to the Regulations for the Training of Teachers. This Introduction to the Code reminds every parent, school manager, and teacher, very emphatically, that the purpose of the school is to form and strengthen the character and to develop the intelligence of the children, to fit them both practically and intellectually for the work of life, to send them forth with good and healthy tastes and the desire to know, with habits of observation and clear reasoning, with a living interest in great deeds and great men, and some familiarity with, at all events, some portion of the literature and history of their country; and this being so, the special charge and duty of their teachers is by the spirit of their discipline and of their teaching, by their personal example and influence, to foster in the children, as they grow up in their hands, habits of industry, self-control, endurance, perseverance, courage, to teach them reverence for things and persons good or great, to inspire them with love of duty, love of

purity, love of justice and of truth, unselfishness, generosity, public spirit, and so not merely to reach their full development as individuals, but also to become upright and useful members of the community in which they live and worthy sons and daughters of the community to which they belong.

Hardly less valuable, as a contribution to education which shall be more thoughtful than hitherto, is the memorandum prefixed to the new Regulations for the Training of Teachers.

Passing from the sphere of the elementary schools to that of secondary education, we enter on a sphere in which there is much greater need of careful study and the guidance of those who know. Our secondary education has by the Act of 1902 been handed over very largely to county councils, excellent but heterogeneous bodies, and for the most part not only ignorant of educational needs, methods, and possibilities, but quite unaccustomed to their practical consideration—altogether unprepared and untrained for the responsible work now thrown upon them, and hampered by their besetting fear of the ratepayers.

Add to these difficulties the prejudice, so common in the ordinary English mind, against what is known as the "expert," that is, the man who knows from experience, and is therefore likely to be earnest for improvement, and to believe that wise educational expenditure will repay itself, and you see how manifold are the obstacles in the way of immediate progress. These county authorities need first of all to be themselves instructed and persuaded as to the right subjects for their schools, the co-ordination or proportion of subjects in any scheme to be encouraged, the methods of instruction, the sort of teachers to be appointed, the wisdom of spending public money on good education, as exemplified in other countries, like Germany, Switzerland, the United States, Denmark.

Our local authorities feel and recognise that something is needed, but very often they seem to be like children crying in the dark. From lack of educational knowledge and educational experience they do not always know the difference between the right and the wrong method, or between the good and the bad school. In our rural districts, at all events, it may be said further that one of our first needs is to persuade the local authorities by some convincing proof that expenditure on popular education higher than elementary is a wise economy, and that their bread cast on educational waters will come back to them, not after many days, but very soon and in their own homes. Thus my observation has led me to the conclusion that by way of preliminary to progress our new educational authorities need instruction or persuasion as to the importance of a sufficient provision for really good secondary education; and it would greatly expedite progress if the Government could and would offer more liberal secondary education grants to be earned by efficient schools, and initial grants towards buildings and scientific equipment, to be met by contributions from local rates or other local sources, public or private.

Many persons and localities would be ready to tax themselves with the view of securing a Treasury grant not available without such taxation. Meanwhile the wheels of our local educational chariots are tarrying on every side so far as higher education, whether general or technical, is concerned.

It would also stimulate our local educational authorities if they could be more fully informed as to the practical advantages which have been derived from a practical system of popular education in such a country as the United States of America, and still more if they had set plainly before them the wonderful results derived by a poor country like Denmark during the last twenty-five years, and in the face of every disadvantage, from the system of education initiated by Bishop Grundtvig and taken up by the Government.

And the need of our middle classes, especially that of the *farmer and tradesmen classes, is* very pressing. A great deal of the education they receive is given in schools of which the public know very little, whether as regards qualifications of the staff—moral and intellectual—equipment, or methods of teaching, or even sanitary arrangements, and it is to be feared that much of this education would on inquiry be found to be very poor, if judged by any reasonable standard of modern requirements.

When we pass to the class of schools generally spoken of as public schools, those that look to the ancient universities as the goal of their best pupils, we enter on another very interesting and important field of study. But for the beginning of our investigation we have to go behind these schools to the preparatory school, which has now assumed a definite place in secondary education, and therefore calls for serious attention. Some of these schools are very good, so far as the conditions under which they work admit of excellence; in others there is, it is to be feared, much room for improvement.

Such schools are now so largely used by parents that their condition becomes a matter of vital importance, as a boy's progress and prospects, his moral and intellectual future, are very frequently determined for good or ill by his experience in the preparatory school, by the bent which has there been given to his morals, tastes, ambitions, by the fostering of his intellectual gifts or the failure to foster them. In the course of my own experience I have known many boys whose prospects in life were spoilt by their unhappy beginnings in some preparatory school, and who consequently entered their public school foredoomed to failure. These schools are in most cases private-adventure schools, conducted for private gain. Their staff consists very often of young men untrained for the work of education, and sometimes underpaid. They are subject to no public inspection or examination; in fact, the general public have no knowledge of their condition.

Seeing how grave are the considerations involved, I hold it to be one of the things needed for the general improvement of our secondary education that every private school, of whatever kind, should be liable to public inspection and public report thereon; that a licence should be required for every such school, and that the staff and their qualifications, and the remuneration given to each of them, the sanitary condition, suitability, and educational equipment of the premises, should all be considered in connection with the giving or withholding of a licence.

As regards the curriculum of the schools preparatory to the public schools, the subjects taught, and the proportion of time allotted to each, it has to be borne in mind that they are not free agents. In this respect they are dependent on the requirements of the entrance examination at the public schools which they supply, just as those schools in their turn are dependent on the requirements of the university to which they send their pupils. Thus, when we come to confer with the authorities of the public schools, our first inquiry is whether their entrance examination is such as to conduce to the best system of education from infancy upwards.

Believing, as I do, that there is room for improvement, I would ask them to consider and come to a general agreement as to the subjects on which special stress should be laid. What place, for instance, is occupied in the Eton entrance examination by such subjects as English language and literature, English composition, spelling, handwriting, and reading aloud? What weight is given to elementary drawing, or to an elementary knowledge of natural phenomena, so as to encourage in the preparatory school an interest in the mineral, vegetable, and animal world around us, and to stimulate in early years the habit of observation, and to impress the difference between eyes and no eyes?

Such subjects as these, it is now generally recognised, ought to be given a foremost place and equal weight with the modicum of arithmetic, French, and ancient languages, which have

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t of interesting their pupils and drawing out their
eir tastes.

erefore, be reasonable, as it would certainly be
l advantageous, to require that all masters should
go through some system of well-considered and
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bationary period. It should, I venture to think,
that no master could be placed on the *permanent*
as certified and registered as having fully satisfied
nt and given proof of his efficiency.

d venture to point out to existing masters and
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hem, *noblesse oblige*.

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public-school education is still to be found in
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pupils intellectually and otherwise for the duties
and for grappling in the right spirit with the
will confront them.

ine, generally agreed by those who know both our
and the work and influence of our public schools,
uch room for improvement in regard to methods
e cultivation of intellectual interests and tastes,
lating habits of thought in the majority of their
pupils. In close connection with these considerations there are two questions of practical importance which deserve a prominent place in any study of our public-school education.

The first of these is whether it is good for all boys alike to continue their life at school, especially at a boarding-school, up to the age of eighteen or nineteen; and the other is whether more encouragement and pains should not be given to developing the best type of day school, or, to put it somewhat differently, whether the barrack life of the boarding school has not, through fashionable drift and class prejudice, become too predominant a part of our English education at the expense of the home life with all its finer educational influences.

As regards the first of these questions, it will be remembered that Dr. Arnold considered it a matter of vital importance to expedite the growth of a boy from the childish age to that of a man. In other words, the boy should not be left to grow through the years of critical change from fourteen to nineteen without special regard to his growth in intellectual taste and moral purpose and thoughtfulness. His education during these critical years should be such as to rouse in him the higher ambitions of a responsible manhood.

Does, then, the actual life of a public school really conduce to this early development in the majority of cases? My own experience has led me to the conclusion that it cannot be confidently held to do so. The boys in any of our public schools may be said to fall into two classes—those who in due course reach the sixth form, and during their progress through lower forms have an ambition to reach it; and, on the other hand, a numerous class who do not expect to rise to the sixth, don't care about it, and never exert themselves to reach it.

For the first class, I doubt if any more effective preparation for life has been devised than that of our best English schools; but the case of the second class is somewhat different. Many of these come to the end of their school time with their intellectual faculties and tastes and their sense of responsibility as men to a great extent undeveloped. From sixteen to eighteen or nineteen their thoughts, interests, and ambitions have been largely centred in their games and their out-of-school life, with the natural results that their strongest tastes in after life are for amusement and sport.

Some of these boys, after loitering at school to the age of eighteen or nineteen, go to the University as passmen, some begin their preparation for the work of a doctor or a solicitor, and many go straight from school into City life as men of business; and nearly all of them suffer from the lack of intellectual and moral stimulus during these later years of their school life.

Now many of these boys could without difficulty pass the entrance examination to the University at sixteen or seventeen, if well and carefully taught; and I have long held the view that such boys would greatly benefit by going to Oxford or Cambridge at the age of seventeen, or even sixteen, if suitable arrangements could be made. It was with this conviction in my mind that I published a scheme showing how this experiment might be tried about twenty years ago. The interval has confirmed me in the opinion that it would be a distinct gain to many boys to take advantage of such a scheme if made available. They would go out into the world from the University at the age of twenty far better equipped and prepared for life, both as regards knowledge and interests, tastes, and character, than by going straight from school at nineteen.

Looking to my own University of Oxford, I see no reason why such younger students should not be safely received. There are at least three Colleges in that University which would find it easy to adapt their arrangements so as to secure this. Each of these Colleges has a hall in connection with it, well-suited for the residence of a college tutor who might have special charge of these younger students, residing in the hall

during their first year with somewhat stricter rules as to ordinary discipline and liberty, but in all other respects exactly on a par with the senior undergraduate members of the College.

On the subject of the day school, as compared with the boarding school, a subject which has not hitherto received the attention it deserves, I may venture to repeat here what in substance I have said on other occasions. Many parents are so situated that they have no choice in the matter; but to the educational inquirer it is a question of much interest and importance. The boarding school is admitted to excel in turning out strong, self-reliant, sociable, practical men of affairs, men who have learnt by early experience not to think or make too much of small injustices, to rough it, if need be, with equanimity and cheerfulness, and to count it a man's part to endure hardness in a manly spirit. It is a fine type of character which is thus produced, at its best; but the best is not always seen in the result, and the system too often produces an undue deference to public opinion, a spirit of moral compromise, and a loss of moral enthusiasm. The human soul in its finer parts is a very sensitive thing, and I do not think the barrack life of an average boarding school is always the most favourable for its healthy growth.

As I look back over the school days of my own pupils, I feel that those of them had, on the whole, the best education who grew up as day boys in good homes at Clifton College. There they enjoyed all the advantages of the cultivated home, which I need not here enumerate, and at the same time, through the arrangements we made for them, all the best elements in the life of a great boarding school.

In the upper school of 500 boys, we had about 160 day boys living at easy distances from the school. These boys were divided into two houses—North Town and South Town—about eighty boys in each house, and they were treated for school purposes just as if they were living together in a boarding house. They were under the same rules as boarders in regard to hours of locking up, or the bounds beyond which they might not go without a note from their parents giving express leave. Their names were printed in a house list, a master was appointed as their tutor, whose duty it was to look to their educational needs and progress, to their reports and conduct, just as if they had been boarders and he their house master. Each house had its own room or library on the College premises, with books of reference, and so forth, for spare hours, and took its part with the boarding houses, and held its own in all school affairs, games, and other competitions. And my experience of this system compared with others has led me to the conclusion that the form of education which may on the whole claim to be the best is that of a well-organised day school, in which it is clearly understood to be the duty of the masters to give their life to the boys in school and out of school, just as if they were at a boarding school, and in which the boys are distributed into houses for school purposes, just as if they were living in a boarding house. Under such a system they get the best of both worlds, home and school.

From the public school we pass naturally to the Universities, and the first question that meets us is the influence they exercise on school education, through their requirements on admission of matriculation and the bestowal of their endowments and other prizes.

On this part of my subject I have seen no reason to alter or modify what I said at Glasgow three years ago, and therefore I merely enumerate and emphasise the suggestions which I put orward on that occasion for the improvement of education both at school and college. I hold that it would be equivalent to pouring a new stream of intellectual influence through our secondary education if Oxford and Cambridge were to agree on some such requirements as the following:—

1. In the matriculation examination (*a*) candidates to be free to offer some adequate equivalent in place of Greek.

(*b*) An elementary knowledge of some branch of natural scie and one modern language to be required of all candidates.

(*c*) A knowledge of some period of English history and lite ture also to be required of every candidate, and ability to wri English to be tested.

(*d*) The examination in Latin and any other foreign langua to include questions on the subject-matter of any prepared boo offered, some questions on history and literature, and translatic of easy passages not previously prepared.

(*e*) Marks of distinction should be given for work of superi merit in any branch of this examination, as indeed, of every pa examination conducted by the University.

Candidates should not be excluded from residence before pas ing this examination, nor should they be required to pass in a subjects at the same time; but the completion of this examin tion would be the necessary preliminary to entry for any oth examination required for a degree.

2. On the question of endowments and the minimising waste in the administration of them there is much to be sa and I would suggest for consideration:

(1) That, as a rule, open scholarships and exhibitions mig be reduced to free tuition, free rooms, and free dinners in hall thereabouts.

(2) That every holder of an open scholarship or exhibitic whose circumstances were such that he needed augmentatic should, on application, receive such augmentation as the C lege authorities considered sufficient.

(3) That care should be taken to discourage premat specialisation at school.

For this end it should be required that no scholar should en the emoluments of his scholarship until he had passed the ma culation examination described above; and a fair proportion scholarships should be awarded for excellence in a combinat of subjects.

The Universities might also do good service in the way stimulating secondary education if some small proportion of th entrance scholarships were distributed over the country as cou scholarships, on condition that the county contributed an eq amount in every case. In this way some equivalent for endowments, so cynically confiscated by the Education Act 1902, might be recovered and used for the benefit of poor a meritorious students.

Other reforms, which would, as I believe, be productive valuable results, are the requiring from every candidate fo degree a knowledge of some portion of our own literature a history, and the encouragement of intellectual interests a ambitions by abolishing all purely pass examinations. A p examination, in which the candidates are invited simply to a at a minimum of knowledge or attainment, is hardly worth a university. The opportunity of winning some mark of dist tion in this or that portion of what is now a pass examina would frequently rouse some latent ambition in an idle man, transform the whole spirit of his work. Thus a modest ref of this kind might be of great practical benefit to the nation helping in its degree to intellectualise the life of a great man our young men, and draw out unsuspected interests, facult and tastes.

My last word is a word of practical inquiry. How is t section to be made of most value as an instrument of educatio progress? It may do a valuable service if the working co mittee of the section, enlarged by the addition of various rep sentative persons, makes it a duty to collect and publish series of papers on the chief branches of our English educati dwelling on its immediate and pressing needs, and how bes supply them. To do this the committee should set to w systematically, commencing in October with monthly meetin and formulating, without delay, the scheme or series of papers be prepared and presented to the next meeting of the Associati

THE INTERMEDIATE EDUCATION BOARD FOR IRELAND.

REPORT OF THE EXAMINERS FOR 1903.

THIS report, containing the reports of examiners on the examinations held in June, 1903, was not published until July, 1904. If it is impossible to issue the whole report earlier, it would be to the advantage of teachers and pupils to publish the remarks of the examiners separately and as soon as possible. We venture to think that they might, in fact, be sent broadcast to every intermediate school certainly before Christmas-time. A full year having elapsed since the examinations, and the mid-summer vacations having commenced, interest in the examiners' remarks will be languid, and many teachers will probably pass them over altogether. This is a pity, as, in the absence of inspection, the examiners form the only nucleus of any kind by which expert outside opinion is regularly brought to bear upon intermediate school work.

One feature of this report stands out in remarkably clear relief. There is an almost unanimous consent in the separate reports that while the Senior and Middle Grade answering was satisfactory and generally good, that of the Junior and Preparatory Grades, and in particular of the Pass Candidates, was unsatisfactory and very inferior. One examiner ventures upon an explanation, which is probably correct, that the teachers for the Middle and Senior Grades are good, and those for the other Grades are not. For this a remedy should be found.

The *Greek* examiner (Dr. R. Y. Tyrrell) reports that the improvement in the Senior and Middle Grades due to the abolition of prescribed authors the year before has been more than maintained, and the *Latin* examiner (Dr. M. Sheehan) similarly says that the Honour candidates in these Grades stand apart from all others by reason of the excellence of their papers. In the lower Grades, where books are prescribed for translation, there are frequent symptoms of having committed the English to memory. There is an unfamiliarity with the vocabulary of Greek tragic poets and of Homer, and in the Junior Grade few of the candidates seem to have been taught that there are words which cannot begin a sentence. Latin quantity appears to have been universally neglected. Verse composition, both Greek and Latin, seems to be almost non-existent.

The new system of prescribing courses of reading in aid of *English composition* has had excellent results. In fact, many candidates laboured under the difficulty of undue wealth of materials. On the other hand, many tried to shorten their labours by reading only one of the two authors prescribed, and in the lower Grades it was painfully manifest that in many cases systematic instruction in composition is not given, and that the pupils are not taught what "composition" means. In *English literature* the examiner (Mr. W. Magennis) is very severe on the Junior and Preparatory Grades. "Numbers of children are made to undergo examination without serious intelligent preparation; beyond learning the prescribed poetry by rote, they had done absolutely nothing . . . Not a few candidates had profited so little by their reading of Scott as to include in their lists of Highland flowers such exotics as "nymph," "ewe," "minaret," "cupola," and "the deadly nightingale."

The examiner in *History* and *Geography* (Mr. Wm. Graham) comments on the weakness in geography, especially of girls, due to little use of an atlas. In history students seemed better acquainted with foreign events than with English statesmen, *e.g.*, Fox, Lord Castlereagh, and St. John. In the lower Grades spelling is often bad, there is little heed of grammar, and imperfect expression of what the candidates had in memory.

The *Irish* examiner (Prof. Kuno Meyer) complains that the vocabulary for reading purposes was altogether too limited, and the literary side of the language too much neglected. He would also like to see some dawnings of the light of philology amongst the students.

The *French* examiner (Dr. Katherine Hogan), while generally complimentary, adds that the fact "that the average answering was improved does not, however, imply that the methods of teaching gave entire satisfaction. The answering of many candidates was indeed so deplorable that one can only believe that, if they were taught French at all, it was by a person utterly ignorant of the language." A sample is given in the translation of "Do you read English books only?" by "Liriez ne vous anglaise livers que."

The *German* report by Prof. V. Steinberger remarks on the want of attention paid to the modification of vowels, the use of capital letters, and punctuation.

Mr. Russell, the examiner in *Geometry* and *Trigonometry*, puts the defects under four heads: (1) want of intelligence in recognising exactly what had to be done, and in begging the question; (2) want of orderly arrangement and much unnecessary repetition; (3) proof of particular cases where general case was also proved; (4) want of care in reading questions. Mere memory work, which was common, was condemned; this arose from bad teaching in certain centres. The Preparatory Grade was very weak. The pupils did not understand what they wrote, *e.g.*, one boy said:—"Take a line, terminate it at one end, and illuminate it at the other." Teachers are urged to insist on accurate drawing of figures.

Dr. Panton, who examined in *Algebra* and *Arithmetic*, condemns the slovenly style of the work given up. "Much is almost unintelligible owing to cancelling." "Untidiness and inaccuracy were prominent." Rough work is done under the impression that it should be concealed from, and not made clear to, the examiner. There is want of familiarity with the connection between square and linear metric measures. The insertion of arithmetic scales in the programme for the Junior Grade is condemned.

HISTORY AND CURRENT EVENTS.

MR. BALFOUR'S speech on the annual occasion known as the "massacre of the innocents" is worthy of remark. He spoke of the prolongation of debates as a disease from which the House of Commons has suffered for many years, and did not think it could be prevented by new rules of procedure. Nor did he think that the difficulty could be got over by Home Rule or by establishing provincial councils, for many Bills applied to the whole of the United Kingdom. If all desirable Bills were to be driven through, perpetual sessions would be insufficient, and our representative system would break down. He was afraid Parliament must go on groaning under the existing system. Nothing short of revolutionary methods would be effective. In other words, Parliament regarded as a legislative body is breaking down if it has not already failed. It has so much else to do. It controls the executive. The present position, therefore, proves the fallacy of the old distinction between executive and legislature, for both Cabinet and Parliament share largely in both. And it is yearly becoming more obvious that, if the "necessary" legislation is to pass, "revolutionary methods" must be adopted. Are we on the eve of a change in our constitution?

"THE acceptance of Christianity does not involve, of necessity, social equality between all individuals in any given

race. nor between one race and another; (2) the acceptance of Christianity does not necessarily carry with it the right to a franchise. The mere fact that he is a Christian does not fit a man to take a share in the government of the country unless he understands how to exercise the franchise properly." We do not of course attempt to discuss the relations of these propositions with certain writings of S. Paul or S. James in the New Testament. But we call our readers' attention to the resolutions of the Provincial Synod of the Church of the Province of South Africa, adopted primarily with regard to the Bantu tribes, in order to ask them to consider the questions with regard to the circumstances of other countries. Will the principles hold good, for example, here in our own country? Do we ask our electors if they "understand how to exercise the franchise properly?" Will they hold good in the southern states of the North American Republic? And will they justify that practical exclusion from the franchise which has been attained with regard to the negroes?

IN May last, there passed away a man whose career reminds us forcibly not only of the methods of empire-building, but of the extreme modernity of our British Empire. In the 'forties of the last century, Mr. John Howard Angas went to South Australia to help in the carrying out of his father's schemes for that then undeveloped part of British possessions. In the work of both father and son we see the individualistic methods which have of recent years been so completely overshadowed by later "imperial" ways. They founded banks, sent missionaries to the "black fellows," founded an asylum for persecuted Lutheran Silesians, improved the breeds of sheep and cattle, gave property for the endowment of hospitals and universities, and so built up the prosperity of South Australia. Their age has passed away. On the foundations built by individualism and free enterprise is being reared a United Australia with hostile tariffs and Acts which exclude "undesirable" immigrants. That is why the record of such a man's death startles us by showing how rapidly ideals have changed.

THE litigation between two Presbyterian churches in Scotland, which ended on the 1st of August in the House of Lords, should help us to understand something of the sphinx-riddle of European history, the relations between Church and State. We have learnt that a *Free* Church may yet believe in Establishment, and be "free" only because it does not approve of the terms which the State offers. That will help to explain the principles of our seventeenth-century forefathers, and the slowness and imperfection with which "toleration" principles advanced. In all countries in the theocratic stage, unestablished Churches (which are often also "persecuted" Churches) are like the opposition in our House of Commons. They believe in the State, but are opposed to those now in office on methods and principles of administration. Only when both religious parties are weary of the strife, and theology ceases to interest the common man, does "toleration" become a practice while ceasing to be a popular theory. But Scotland has not yet reached that stage. Events in France seem to suggest that they have not reached it there. Everyone is either clerical or anti-clerical, and what will be the end is yet impossible to tell.

THE Board of Education has been informed through the Foreign Office that an Exhibition of works of art, under the patronage of the King of the Belgians, will be arranged in a special pavilion within the exhibition grounds of the Universal and International Exhibition to be held in Liege in 1905. Full particulars as to the conditions attaching to exhibits are given in the official regulations, which can be obtained on application to *the Consul General for Belgium*, 29, Great St. Helens, E.C.

ITEMS OF INTEREST.

GENERAL.

REPLYING to the questions raised in the recent debe Education Vote in the House of Commons, Sir Willia referred to the future of secondary education. Las said, he had reason to express anxiety as to the te secondary schools. It showed too early a specialisatio was a gradual loss of the cultivation of language and and the tendency was too exclusively scientific, whe was wanted really was a liberal education. They had to effect a change. First, they tried to define roughly a secondary school. A secondary school was distin technical institute, which gave special teaching of an character, and distinct from continuation classes, whic great variety of teaching but no continuity of teachi general school education. The Board of Education ha that a secondary school must give a general educatio and girls up to the age of sixteen and beyond. The must be complete so far as it went, and progressive tinuous. The boys and girls must learn thoroughly did learn, and never be allowed to mark time. Th type of school would offer a general education, physica and moral, given through a complete graded course tion of a wider scope and more advanced degree than at the elementary schools. The Board thus hoped to a type of school which would give what he described a education.

THE Board, Sir William Anson continued, would much to be able to increase their grants, and assist mo and thus get a stronger hold upon the secondary educa in the minor secondary schools. There was a certain regarding the government of schools, and the relati headmaster to the local authority and the governi Local authorities were somewhat apt to believe that t themselves time and secured greater administrative e they governed the school through their director of The Board had constantly pressed upon them the advi appointing a governing body for the school, with powe financially, and urged that if a capable man were ap headmaster he should have full power of conferring governing body and expressing his views to that bo importance of these smaller schools securing an effic master was very great. The authorities would, he soon realise that, unless they established a governing gave the headmaster the powers he had described, they get what they wanted in the way of a successful school.

SPEAKING of the work of the training colleges, Si Anson called attention to answers from the examinatio teachers in connection with the King's Scholarship. was asked regarding the frontiers of France. Th wrote: "The Alps are accessible over their summits, Pyrenees are not; they are accessible only at their The Alps divide France from Spain. The Rhone seem to form a natural frontier; but the Germans c A student at a training college wrote an apparently wel description of Bunyan's "Pilgrim's Progress," and th "The beauty of the story is enhanced by the charm of in which the poem is written." Another student s "the founders of Italian architecture were Torrigiano Cotta." These things struck him as being much w ignorance. They showed the confusion of mind of th A lecture which would be useful to others was only

to the student who came to a subject perfectly ignorant. Unless we educated our pupil-teachers better, he continued, we waste money at both ends. We waste the money spent on training colleges by sending raw material of which good use cannot be made, and we waste the money spent on elementary education on account of the quality of the teachers supplied.

THE Duke of Devonshire, at the opening, on August 8th, of a new technical institute at Eastbourne, said education is now, in a wider sense than it has ever been previously, a science in itself, and the opinions of those who have made a study of that science should be obtained in order adequately to conduct our system of education. Now we are endeavouring to frame a complete educational structure we must depend in great measure upon the advice of educational experts. The important object in education is not the accumulation of knowledge which can be successfully paraded in an examination. The aim of education should be directed just as much to the training of average schoolboys as to the most brilliant of the students. It is to train their intellects and make them more useful citizens that the work of education ought to be directed, and not to produce a number of brilliant results of accumulated information. His advice was to obtain the services of the most capable citizens, whether men or women, for their educational work. Make it clear to educational experts and teachers that the people of the country look more to the results of average children than to exceptional boys and girls.

MR. ACLAND presided over a conference, held on July 21st in Manchester, to consider the question of the establishment of school-leaving examinations and inspections, with a view to ensure the satisfactory organisation of secondary education. During the course of a valuable address Mr. Acland referred to the subject of State aid for secondary education. He said that until the Government—and he drew no distinction between one Government and another—could see its way to give more money to secondary schools we should never get secondary education in this country put on the footing which it ought to hold. The Treasury gives ten millions a year to elementary education, and he was very glad to say it was holding forth hopes of giving £100,000 a year to our university colleges; but secondary education in day schools has to put up with little more than £200,000 a year. That is wholly inadequate, and if we are to have a proper supply of secondary day-schools the Treasury must rise to something like three-quarters of a million at least. The grants, as shown in the latest memorandum, seem likely to come to less rather than more. The more advanced schools used to be able to get £5 a head easily for what was called division A. In future the number of schools which will get £5 per head will be very limited indeed. Everything which relieves secondary schools is to the good, but all that can be done at such conferences will be but little unless a more effective money supply for those schools, upon which ultimately the universities themselves depend, can be assured.

LATER in the same address, Mr. Acland referred to the reaction on the part of most educationists against the multiplicity of examinations for which secondary schools prepare their pupils. Giving an example, he said that lately a return sent in to the West Riding County Council showed that a secondary school, with from ninety to a hundred boys, had the following external examinations: Oxford Locals—senior, junior, and preliminary; London Matriculation, Victoria Matriculation, Intermediate Examinations of the London University, Civil Service—second-class clerks, boy clerks, assistants of Excise; preliminary examinations for the medical and dental professions, and occasionally a boy for entrance at Oxford or Cambridge. It required a peculiarly good headmaster in such conditions to carry on what after all was the main work of a school, a steady current of teaching of an informing and character-making kind which did not want to be interfered with by perpetual preparation for examinations. Teachers will be glad when the bulk of these examinations are grouped into one, and when one certificate will frank boys and girls for the whole lot. The effect of so many examinations is bad on teachers, bad on the curriculum, and bad on boys, who come to think of schools not as places of education in the highest sense, but as examination shops. Character is more important than certificates, and preparing for life is even more important than preparing for examinations.

THE following resolutions were adopted by the conference: (i.) That this conference would welcome the establishment of a scheme for examinations for secondary schools, which should be under the direction of a board representative of the joint matriculation board of the Universities of Lancashire and Yorkshire, and also of local authorities for secondary education in the areas served by such universities and of the teaching profession; and that school certificates should be issued in connection with such examinations. (ii.) That the examinations should be so arranged as to serve as recognised preliminary examinations for the professions as well as for the universities, and that senior and junior certificates should be issued; and that a system of inspection should be instituted in connection with the examinations. (iii.) That the board of examiners should have information as to the course of studies pursued in the various schools which they examine, and that the papers should be set after consideration of the school curriculum. (iv.) That steps should be taken to secure the acceptance of the certificates as exempting from matriculation examinations of universities, and entrance examinations of various professional bodies and public offices, and also to secure the interchangeability of certificates issued by various examining bodies. (v.) In order to secure the objects aimed at in the last resolution the conference approves of the establishment of a central board for England, consisting of representatives from the Board of Education and from the different examining bodies, whose duties should be to co-ordinate and control the standards of these examinations, and to take steps to secure the interchangeability of certificates.

EACH successive set of "regulations" issued by the Board of Education is heralded by its prefatory memorandum, and these official declarations of educational faith deserve careful study. They are, we are glad to recognise, remarkable for their catholicity and inspired by an exact appreciation of existing needs. The memorandum which prefaces the "Regulations for Evening Schools, Technical Institutions, and Schools of Art and Art Classes," gives an official sanction to views urged consistently by those who understand the precise nature of the kind of technical instruction in need of which this country stands. The vital importance of a properly graduated course of technical instruction which occupies the whole time of the student during the day is emphasised. The danger that unorganised evening classes, bearing no relation the one to the other, may result in mere waste of time and effort on the part of teachers and students is appropriately pointed out, as well as the need for a careful survey of local industrial needs before deciding what evening classes shall be arranged. The uselessness, too, of attempting to impart technical instruction to students who have received no preliminary training, or a training of the wrong kind, is duly recognised, and it is prescribed that no student may be admitted to any course of instruction assisted by the Board of Education who is not sufficiently prepared to benefit by the instruction given in that course. It certainly begins to look as if in time we shall have an organised and complete system of national education.

THE French Association met this year at Grenoble, where M. C.-A. Laisant, the president, in his opening address, sought to vindicate the civic position of the mathematician in France. The success which had attended the public careers of eminent mathematicians was due, in the president's opinion, to their recognition that the absolute was but a convenient way of expressing the relative and that the study of exact science was a means rather than an end. It is noteworthy that many Frenchmen of mark, Napoleon, Carnot, Arago, Poincaré, and M. Laisant himself, gained distinction in mathematics before entering public life. This fact must be ascribed rather to fashion than to the Gallic temperament. In England, fashion has decreed that a knowledge of classics shall be the preliminary work of a statesman's career. As a consequence we find that the church produces many of our eminent classical scholars, while the ranks of the mathematicians have been recruited, since the abolition of the Test Acts, from nonconformists. M. Laisant went on to emphasise the necessity for reform in the teaching of science. The methods adopted in elementary work were, in his opinion, most in need of reform. The child's memory was too often developed at the expense of its intelligence. The attempt to awaken curiosity was not sufficiently employed; and the child did not gain, what was within its power, a living interest in scientific phenomena.

M. FEHR, of Geneva, gave an account, in Section 2, of an enquiry which was being made into the environment and methods of work which have been found favourable to mathematical study. The object is to collect experience, personal or collective, which may be valuable to mathematical teachers. In particular, the results of psychological experiment are sought. A sheet of questions has been printed and is being distributed among mathematicians of note. These questions relate to psychological and physiological experience. Copies are being sent to English scholars. Those who do not receive a copy and desire to contribute should apply to M. H. Fehr, 19, Rue Gevray, Geneva. The result of the enquiry will be announced at Cherbourg in 1905.

WHILE the choice of a text-book on geometry is causing English teachers much embarrassment the French teacher has probably had his difficulties solved by the French Association. On August 6th the mathematical section, after a long and careful discussion, decided to recommend the *Nouveaux Elémens de Géometrie*, by M. Ch. Mairey, Jobat, Dijon, to the Minister of Public Instruction. This book has been used experimentally in several lycées and training colleges and has gained favourable opinion everywhere. The discussion showed that heuristic treatment is necessary from the commencement, that it is not advisable to lay down axioms or postulates until the geometrical instinct has been awakened by a course of experimental geometry, and that solid geometry can be studied simultaneously with plane geometry to the advantage of both.

AN exhibition of manual work in schools was opened on August 11th in Santander. Its inception was due to the energy of Sr. Fresnedo de la Calzada. Sr. Faro de la Vega had taken charge of the lessons previously given to no less than sixty-five of the elementary teachers, both public and private, of the city and province of Santander. These had taken up the study with the utmost enthusiasm, some having walked as much as ten miles each day to attend the class. About forty-five masters and mistresses exhibited samples of their work, which included relief-maps in clay, wire-work and some woodwork. The geometrical models were especially neat, and the Froebel work of the mistresses, with its industrial application, deserved the highest praise. A separate room was devoted to the exhibition of work done by the children of the municipal schools. Everybody spoke in glowing terms of this first step towards the reform of Spanish education, and at the opening ceremony the Mayor not only promised the support of the local authorities, but offered to defray the cost of sending some of the masters next year to the Model School of Ripatransone in Italy. The promoters of the exhibition did well in holding it at a time when Santander was full of summer visitors, for the movement may thus be spread throughout Spain.

A NOTICE of the Cambridge University Extension Summer Meeting, now being held in Exeter, has already appeared in this magazine. Now that the first part of the meeting is nearly over, it is possible to say something as to the success of this new venture. It was not known beforehand whether students from a distance, especially those from foreign countries, would be attracted in large numbers to a summer meeting apart from the usual surroundings in a university town. The venture has, however, been abundantly justified by its success. Over 60 students are attending the meeting, about a third of them being foreigners, from all parts of the German Empire, Austria, France, Italy, Switzerland, Belgium, Holland, Denmark, Norway, Sweden, Finland, Russia and Japan; also students from Australia and the United States of America. The crowded halls and the enthusiastic reception given to the lecturers were evidence in themselves of the interest aroused. The names of the lecturers were a guarantee that the "Age of Elizabeth" and the other subjects included in the programme would be worthily treated. Special features of this year's meeting have been the intimate connection between the main subject of the lectures and the county of Devon; the excursions to places of historic and scientific interest or great natural beauty in the neighbourhood; and the indefinable charm of an old cathedral city, where the strangers have received such a kindly welcome from the citizens. To the bond of fellowship that unites the students of many nationalities is added the bond between the visitors and the hospitable city of Exeter.

A SUMMER course of Nature Study was held at the Hartley University College, Southampton, during the first fortnight in August, under the direction of Dr. J. Travis Jenkins, professor of biology at the college. The number of applications for admission was greatly in excess of the accommodation, and a large number of intending students were unavoidably refused admission to the course. The students were, for the most part, members of the teaching profession; training colleges, secondary and elementary schools being represented. Some of the students came from Scotland, Wales and the North of England, and, to judge from the numerous applications received, the supply of summer instruction of this kind is by no means equal to the demand for it. The details of the work of the course, which were described in THE SCHOOL WORLD for June, 1904, were closely adhered to, and it is therefore unnecessary to describe them again.

A SUMMER vacation school has been held for the third time in succession this year at the Passmore Edwards Settlement, Tavistock Square, London. At the invitation of Mrs. Humphry Ward, the honorary secretary of the movement, a company of educationists and others interested in this experiment to make the holidays of London children both more enjoyable and more educative met at the school on the afternoon of July 28th. An hour was spent by the visitors in inspecting the classes in the buildings and in the garden, where the children went through drill exercises and received lessons in dancing, singing, pentering, clay-modelling, drawing, cooking, &c. The children also took part in various games, such as soap-bubble blowing, skipping, and sand-digging. The out-door lessons were given in a well-wooded garden behind the buildings.

held subsequently Mrs. Humphry Ward made a
he progress of the movement since it was started
the time of the small-pox epidemic, when, owing
fection, fewer children than usual were sent away
ountry holiday funds, and it occurred to some of
their large building and garden, necessarily little
hey might do something to fill the gap. Financial
as forthcoming, and within a month there were
the roll. In 1903 the experiment was repeated
l larger attendance, and a slightly larger staff.
ere able still further to expand the scheme and
ber of children invited to 1,000. She estimated
about 600,000 children left in London during
ths, and while these children had nothing but
o play on, there were great school buildings
playgrounds of the schools and the London
sed against them. She asked them to join with
ie London Settlements in calling upon the local
ider the matter seriously. The Bishop of Here-
olution, which was adopted, urging the desira-
hing throughout the country vacation schools
at the Passmore Edwards Settlement. His
onnexion with a similar school which he had
ereford convinced him that the cost was small,
ould have no difficulty in the matter of teachers.

of Education has received from the French
notification of its intention to attach as tem-
to certain lycées a number of young English
lmasters, or intending schoolmasters who have
proved course of training and hold some recog-
r secondary teachers. These assistants will not
in the regular work of the school, but will
onversation groups under the direction of the
hours' work a day will be expected of them.
time will be at the disposal of the assistants,
be able to pursue their own studies. The
ceive no remuneration, but will be boarded and
stitutions to which they are attached. Candi-
posts should forward their application to the
ial Inquiries and Reports, St. Stephen's House,
S.W., enclosing testimonials as to character,
aching experience, and a medical certificate of

of Education has issued its Regulations as to
nas for the coming year. The pamphlet con-
hours of training and rules for recognition of
ifery, and cookery diplomas issued by training

Education has announced that Shakespeare's
ay be taken as an alternative to "Much Ado
in English literature and language at the King's
mination of 1905.

nent of Agriculture and Technical Instruction
published the third bulletin in its science and
title of the latest addition to this useful series
"The Quadrant Electrometer: its Construction
t is written by Mr. R. G. Allen, of the Royal
ce, Dublin.

of internal students of the University of London
d the examination in pedagogy contains fifteen
these are fourteen women and one man. Only
obtained a first class, and both were women.
candidates were trained at the London Day
e, and one at Bedford College.

A CURIOUS echo of the Boer war occurred at a well-known coaching college last month. Many of the pupils of this college are preparing for engineering or mining. One of them happens to be the son of a Natal farmer, whose estate lies at Dundee, in the extreme north of that colony. Another pupil is a son of a Boer mining proprietor who has borne arms with his father against us in the recent war. He had formed part of the army that invaded Natal, and had put up for several nights at the very farm from which the parents of the other student had fled. So the two whilom enemies met at last in the friendly rivalry of the class-room.

WE commend to the attention of our readers an article by Mr. J. L. Paton on "Training in the Service of Man," which is published in the August issue of the *Parents' Review*. Mr. Paton believes in the educative value of useful work, however humble that work may appear. The following quotation will indicate the nature of the advice Mr. Paton gives: "From the first possible moment, let the child serve. . . . There are boots to be blacked, there are beds to be made, there are errands innumerable to be run, potatoes to be peeled, oranges to be sliced for the marmalade, gooseberries to be topped and tailed for the jam, bills to be paid, there are garden beds to be weeded, there is wood to be chopped. Whatever it is the child can do, let it do as much as practicable. The fault of your rich and comfortable homes is that the child learns only how to be ministered unto, not how to minister. And when it comes to workshop lessons in manual training, I find no such feckless little fellows, none with their fingers so thumby, as these from your luxurious and pampered homes. I remember seeing at Bilton Grange a motto, which I shall never forget. It is a new Beautitude and a new Commination:—

'Blessed is he that hath learned to do things for himself,
And cursed is he that hath learned only to ring the bell.'"

MESSRS. J. J. GRIFFIN & SONS, LTD., have issued a new edition of Part III. of their illustrated and descriptive catalogue of scientific apparatus. In this part, which is devoted entirely to electrical and magnetic apparatus, we find a complete list of all possible requirements—from the "cork swan" to a set of apparatus for demonstrating wireless telegraphy. In addition to the simpler appliances required by all physical laboratories, we notice several special appliances of comparatively recent introduction, *e.g.*, the electrolytic break, apparatus for Prof. Elihu Thomson's experiments on electro-magnetic repulsion, bismuth spiral for magnetic measurements, &c. The usefulness of the catalogue is increased by the full descriptions of numerous items, and by the tables of constants and data, which are inserted.

THE recently published "Besuchs-Statistik" for the semester ending in March last shows that there were 37,854 matriculated students studying in German universities, including 3,093 foreigners; the number of non-matriculated students was 9,187, thus making a sum total of 47,041. Of the different universities, Berlin easily stands first with 7,503 matriculated and 6,353 non-matriculated students. The next in numerical order are Munich with 4,609, Leipzig with 3,772, and Bonn with 2,294 students of all classes. Breslau and Halle have each more than 1,500, and the following nine universities more than 1,000 students:—Tübingen, Göttingen, Heidelberg, Strassburg, Freiburg, Würzburg, Münster, Marburg, and Giessen. It is a remarkable fact shown by the statistics that by far the largest proportion of non-matriculated to matriculated students, viz., 42 per cent., is to be found in Berlin. Women, represented at all the universities except Münster, Griefswald, and Rostock, form a seventh part of the total of non-matriculated students. Berlin claims the largest portion of Germany's lady students, for 42 out of every 100 prefer to study in the Imperial capital.

FROM the same publication it appears that the total number of students at the French universities for the semester ending in March was 30,405. Here again the university in the capital easily heads the list with 12,948 students. Then come Bordeaux, 2,320; Toulouse, 2,191; Montpellier, 1,707; Nancy, 1,327; Rennes, 1,190; Lille, 1,164; Aix-Marseilles, 1,080; Dijon, 880; Poictiers, 863; Caen, 752; Grenoble, 705; Besançon, 333; and Clermont, 299. 10,972 belonged to the law faculty, 6,686 to the medical, 4,765 to the science, 4,384 to the arts, 3,014 to the "pharmaceutical" faculty. The sum total of women studen amounted to 1,125, of whom 677 were of French nationality and 448 foreigners—almost entirely of Russian birth.

MR. E. S. ROBSON, Lecturer in Physics at the Royal Technical Institute, Salford, has been appointed principal of the Warrington Secondary and Technical School.

SCOTTISH.

THE opinion was expressed in these columns last month that the only way to save the Scottish Education Bill was to call a conference of the Scottish members and dispose of the great majority of the amendments by mutual agreement. This course was found impossible owing to the opposition of a small but determined group of members. As a consequence, "the blind fury with the abhorred shears," in the shape of the Prime Minister, has been compelled to "slit its thin-spun life." This decision has been received in Scotland with deep regret and with general indignation. Here we had what was generally admitted to be one of the most comprehensive schemes for the reform of the Scottish educational system that has ever been drafted. It had been received with a chorus of approval, and passed its first and second reading stages without a single division. After making all allowance for the trying nature of the parliamentary session, a protest must be made against the Prime Minister's treatment of the measure. The three days allotted to the committee stage of the Bill were wholly inadequate, even if it had been absolutely non-contentious, which no Bill of such magnitude could possibly be. In addition almost half the time on these days was taken up by the discussion of private Bills which were given the precedence. The Scottish members seem to have lost all driving power, or they would have secured better terms for the measure. The outlook for next session is so uncertain that no comfort can be derived from Mr. Balfour's pledge to give the Bill a foremost place then.

IN connection with the Sanitary Congress which met at Glasgow this year, a conference on the hygiene of school life took place. Prof. Edgar presided over a large attendance of teachers, doctors, and school-board managers. The president, in his opening address, referred with satisfaction to this the first conference of the kind in Scotland. The whole question of school hygine, he contended, has been greatly neglected in the past, and, now that the conscience of the nation has been awakened by the disclosures of the Committee on Physical Training, it should be put on a thoroughly scientific basis. It is only now beginning to be recognised that the teacher is more than an instructor in reading, writing, and arithmetic. He is an important factor in the highest of biological processes and in social evolution, and, whether headmaster or assistant, should know, for his pupils' sake and for the nation's sake, the nature of the growing organism, the child, and the physical environment best suited to its health and growth. The time has come, he argued, when hygienic physiology should be required as part of the professional training of every teacher.

DR. A. K. CHALMERS, medical officer of health for Gla read a paper with reference to the medical examinati school children in Glasgow. He gave details of his exa tion of large numbers of pupils from schools of the very po type and of the most select. Grading boys and girls accor to the houses in which they lived—one room, two rooms, rooms, and upwards—Dr. Chalmers found that almost in ably the advantages in height and weight were on the sic those whose housing accommodation was largest. One- houses have their distinct type of child, stunted and bligl and far below the Anthropometric Committee's standar height and weight. The two-room house has its type, slightly better than the former, but still low down on the s There can be no doubt of the value of investigations su Dr. Chalmers has undertaken. All these facts call fo crimination on the part of the teachers, and more especia the inspectors. Exercises and lessons should be adapted t peculiar circumstances of each class, for it is safe to as that their mental standard will be as much below the av as the physical.

SIR HENRY CRAIK, on the occasion of his impending r ment from the office of Permanent Secretary to the Sc Education Department, was entertained at dinner in the H of Commons on August 2nd by the Scottish Members of P ment. Lord Balfour of Burleigh presided over a compa fully forty members. Colonel Denny, who was responsib the arrangements, intimated that he had letters of apology all the Scottish members who were not present. Lord Ba in proposing the health of Sir Henry Craik, said they we glad to have this opportunity of showing their gratitude t who had done such notable work in the cause of nat education in Scotland. Thirty-five years had been spe Sir Henry in the service of Scottish education, and it had no half-hearted service that had been rendered. His had b strenuous life from first to last, and the result of this wa large on the history of Scottish education.

SIR HENRY CRAIK, in reply, said he was astonished honoured when this unique invitation was addressed to He was still more honoured by the gracious words of appr tion which had been spoken, and by the generous accept they had given to those words. He felt that that compli was not offered to him solely as an individual, but as repres ing a department carrying on an all-important branch national activity. He was glad to have this opportunity stating that no man had ever had more devoted and more lo colleagues than he, and he should always look back with pr on having had the good fortune to be chief of such a numbe distinguished and able colleagues. Sir Henry gave seve interesting statistics, showing the enormous growth in the w of the department since he had first joined it. One, howev will suffice. In 1870 the Parliamentary grant was £150,0 it was now £1,750,000. In conclusion, he alluded to friendship and regard by which his relations with member Parliament had always been marked, and he thanked them the sympathy and indulgence which they had at all tim shown him. To-night they had paid him a unique distinguished honour, and one which he would always member.

DURING the last decade the curriculum in high schools been amended and extended on the lines demanded by busin men. Commercial education has been regarded by some as panacea for all evils, and snippets of shorthand, book-keepi and typewriting, and business routine were introduced into curriculum of the modern side in most schools. Mr. J Harrison, master of the Edinburgh Merchant Company,

one of the shrewdest business men in the East, declared at the closing of the Merchant Company Schools that this was not education, and was not business. Teachers have all along protested against the uneducational aspect of these subjects, but the clamour for them compelled many to throw them as a sop to the Cerberus of commerce. In view of these facts, it is rather amusing to have Mr. Harrison stating that teachers would have to lay aside the formulæ which afflicted most of them, and begin *de novo* to find out the principles on which boys should be educated. Mr. Harrison believes in a curriculum comprising English, mathematics, modern languages, science and drawing, not on the old scholastic lines, but in keeping with the modern spirit, and with a direct bearing on practical life.

THE results of the examination for the L.L.A. diploma of St. Andrew's University, which was held in numerous centres in Great Britain and Ireland, and various centres abroad, on the 31st of May and the 1st and 2nd of June, have just been issued by the University, from which it appears that 960 candidates entered for examination, as compared with 902 candidates in 1903. Three hundred and six candidates entered this year for the first time, as compared with 231 in 1903; and, from the commencement of the Scheme in 1877, 6,221 candidates in all have been entered for examination. One hundred and one candidates have this year completed the requisite number of subjects, and will receive the L.L.A. diploma of the University. In regard to the various subjects in which candidates entered, 1,400 papers were written, passes were obtained in 764 instances, and honours in 214.

WELSH.

IN connection with the recent Regulations issued by the Board of Education, it is interesting to note that the Board has made an important concession to Welsh pupil-teachers, which will be of considerable service in assisting the finances of the Intermediate schools. Under the new regulations a special grant of £4 10s. per annum is made for each pupil-teacher receiving preparatory training, and of £7 a year while attending central classes for the instruction of pupil-teachers. The Board of Education has agreed to recognise attendance at a Welsh Intermediate school as fulfilling the requirements of the new regulations. Accordingly the Welsh County Councils can now arrange, when they wish, for all candidates for pupil-teacherships, and for pupil-teachers, to enter the Intermediate schools, with the grants as stated.

THE Carnarvonshire Education Committee has just issued its returns for the past quarter, and can show 11 per cent. better attendance than in the corresponding quarter of last year in the public elementary schools. The average attendance for the whole county is now 87·8 per cent. It is stated that if this standard can be maintained the increase of grant which it will bring about will amount to £3,000 a year from the Treasury. The combined salaries of the school-attendance officers is £750 a year.

AT Newport, Monmouthshire, the Education Committee has decided to ask Prof. M. E. Sadler to report upon the education facilities in the borough, and to make recommendations as to the improvement and supplementing, if needed, of the present schools.

THE Pembrokeshire County Council has decided that their Director of Education shall be appointed at a salary of £250 a year, advancing by annual increments of £20 to £350. There were fifteen applicants for the post.

THE Carmarthenshire County Council have now before them the details of the cost of the inquiry by Mr. A. T. Lawrence, K.C., for the Board of Education at Carmarthen. The total expenses of the enquiry, to be defrayed by the county, amount to over £700. It was urged by one member of the Council that, since Carmarthenshire was a test case for the whole of Wales, the County Councils of Wales as a whole should pay the expenses. Another member considered that the County Council had saved £5,000 or £6,000 by its policy. On the other hand, it was suggested by a member of the Council that the Education Committee had advertised Carmarthenshire "as the one county which was foremost in breaking the law," and another thought that those who were responsible should pay the amount themselves. Eventually the Council passed the payment of the accounts.

THE Roman Catholic Bishop of Menevia (Dr. Mostyn) has stated that it is intended to establish a college at Holywell where students for the Welsh priesthood may obtain a thorough knowledge of Welsh, as well as pursue their other studies. It is said that the attempt has been made by Breton priests to accommodate themselves to the Welsh language, as the two languages have much in common. But the Bishop feels that it is incumbent to make more systematic provision for Welsh-speaking priests.

THE passive resistance of the Welsh members of Parliament when the House of Commons went into committee on the Education (Local Authorities Default) Bill has led to speculation as to what will be the future attitude of Wales towards the administration of the Education Act. It has been threatened that the leaders will recommend the local authorities *not to administer the Act at all.* It is difficult to understand exactly what this would involve. If carried out without any reservations, such a policy would apparently lead to the collapse of all grants from County Councils for secondary, technical, and higher education—regions in which hitherto there have been no dissensions.

RECENT SCHOOL BOOKS AND APPARATUS.

Classics.

The Characters of Theophrastus. Edited by J. M. Edmonds and G. E. V. Austen. With illustrations. xi. + 171 pp. (Blackie.) 4*s.* 6*d.*—Here for once is a book that is wanted. Even the plain text of Theophrastus seems to be out of print, while the only annotated edition which is of any use, Prof. Jebb's, has long been so and commands a high price. It must be admitted that this is not a scholar's edition; the editors have not seriously tackled the text, a thorny subject indeed, and the notes, though full and useful, do not show the mastery of the expert. There are, indeed, not only omissions but mistakes in them. But the editors have availed themselves of the critical work of others, and have introduced some undoubted improvements into the text; and their notes contain a good deal which has never before been printed in illustration of this author. Their introduction is very good, and they have done well to compile a table in which the titles of the "Characters" are compared with the translations of Healey, La Bruyère, Needham, Howell, and Jebb. The pictures are well selected, and their authority more clearly indicated than is usual in this series.

Longmans' Latin Course. Complete edition. With copious exercises and vocabularies. xi. + 378 pp. 3*s.* 6*d.*—We lately noticed the second part of this work, and explained that it is based on the progressive principle, small portions of grammar being given with exercises upon them. We then indicated what seemed to be its chief fault, the absence of hints for *viva voce* work. The exercises in books of this type are never enough by themselves. We think also that all long syllables should be marked.

Compositions and Translations. By the late H. C. F. Mason, with memoir by R. C. Gilson; edited by H. H. West. xvi. + 167 pp. (Clay.)—This is a charming book, which will be the delight of the scholar. Mr. Mason was a finished composer, and his work is not confined (like that of most moderns) to the commoner metres; he has some excellent pieces of Latin lyrics. We may especially mention a translation of "Dinah Doe of the Ohio" into the metre of Catullus's "Epithalamium," and some clever pieces of nonsense, renderings from "Alice in Wonderland" and *Punch*, and a set of trochaics representing "She went into the garden to cut a cabbage leaf," &c. Mr. Mason's humour is infectious, and he must have been a great loss to Haileybury.

The Agamemnon of Aeschylus. Translated by Dr. W. Headlam. 61 pp. (Bell's Classical Translations.) 1*s.*—Dr. Headlam's translation is accurate, but has no distinction of style; it is, indeed, rather flat and lifeless. The book has, however, a value in another respect. Dr. Headlam translates from a text of his own, which embodies the work of scholars on this play done in the last twenty years. The conjectures or corrections are given in notes below the text, and thus the student will have those researches digested for his use. It must not be assumed that we always agree with Dr. Headlam. Far from it; we think he is too ready to emend. Nevertheless, it is a useful book.

Sentences for Latin Composition based upon the exercises in Fables of Orbilius. Part II. By A. J. Smith. 14 pp. (Arnold.) 6*d.*—Teachers ought to be able to make up such sentences as these by the score *viva voce*; but if they cannot, they will find this pamphlet of some use. There is, however, very little in it.

Edited Books.

The Masters of English Literature. By Stephen Gwynn. 424 pp. (Macmillan.) 3*s.* 6*d.*—The reflection which this volume has forced from the present reviewer is the question: How is it that when a genuine man of letters sets to work to write upon literary men and their ways and words and works he produces, apparently without great effort, more criticism that is worth reading than all the editors of school books and all the University Extension lecturers put together can do, in spite of all their pedantry? To read this latest volume of Mr. Stephen Gwynn's is to be convinced that the case is so; and to feel that the only adjective which properly characterises this book is "masterly." This is genuine literary criticism. In some respects it ought to be called the cream of criticism. It abounds in unusual and delightful idioms of style. It is as well worth reading as Hazlitt or Charles Lamb. It presents a complete purview of all that is essential in the history of English letters, although a most judicious restraint has kept a great deal of unessential matter out of it. It carries the reader on irresistibly from the first page to the last. It is never in a single sentence prosy, learned, or obscure. In a word, it is a book to delight the heart of a book lover, and it will in all probability be eagerly welcomed by everybody. For once Byron gets his due in this book. The judgment passed on him and his work is one of the author's happiest strokes, and Burns is similarly fairly treated.

The Use of Words. By Georgina Kinnear. 105 pp. (Murray.) 1*s.*—This little volume as a grammar primer is really wonderful. It certainly does teach the elements of English grammar in such an easy way that teachers who use it will find their pupils making progress at comparatively small cost to themselves. But it does much more than this, and therein lies its unique excellence. It considers grammar to be only a means to an end, namely, a study whereby we increase the power of expression and learn by degrees to ensure an absolutely correct use of the English tongue. Hence its title; which it may be said is so far satisfactory that a student gets some way on in the book before he finds out that he is studying essentially a primer of English grammar. This volume deals with accidence only, and Miss Kinnear promises another on Syntax which we should be delighted to see as soon as possible. This volume would have been more of a school book if examples and exercises had been given; but so, it would perhaps have defeated part of its object. The lack of them is the only lapse from completeness, we need remark; though on p. 25 "The Teutonic inflexion '*inn*'" surely is wrong. "Queen" in German is *Konigin* with only one "n," not two.

The Folk and their Word Lore. By Dr. A. Smythe Palmer. 194 pp. (Routledge.)—Dr. Palmer describes this entertaining volume as an essay on popular etymologies; in reality it is a continuation of the work he did when more than twenty years ago he published a large dictionary (which we should like to see reappear in a new edition) of verbal corruptions. The heart of his aim is to demonstrate and account for the way in which English words are corrupted by those who use them, especially among the less educated and uneducated classes. This small volume is a mine of information, and all teachers of English literature would do well to possess it. Although Dr. Palmer starts in each chapter with some philosophical idea drawn from wide research in philology, the main point of the work is an exhibition of erudite scholarship and immense industry in collecting examples, and throughout sufficient indications are given to assist any inquirer in this field of study to gain access to literary sources and the great authorities in philology. If the larger work should not be forthcoming, as we have suggested, this smaller one will keep any student going for a long time.

Selected Essays of Charles Lamb. By G. A. Wauchope. xxxvi. + 413 pp. (Ginn.) 2*s.* 6*d.*—This for a school book is a tolerably bulky volume, and in England, where education editions of Lamb are as the sands upon the seashore for multitude, it may not command quite so ready an attention as it deserves. In America, to judge from the preface, things are quite different; there is no good transatlantic educational edition, says the present editor; this production ought therefore to find a large sale. It may be almost unreservedly praised. The selection of essays has been well done, and includes many of Lamb's critical essays not included in either of the immortal collections by Elia. But the interest of the volume centres in the introduction, which is a substantial, scholarly and complete piece of literary criticism of the genuine kind. It covers much ground, though confessedly not all, and it makes good reading. The notes are satisfactory, and while they are never long-winded learned, they deal with all necessary points, and demonstrate wide and careful research. We do, however, still take exception to the "Review Questions" which appear to be a continuous feature of this series. To take an example from p. 3[illegible] quite at random, is to show why. "1. Note the beautiful simplicity and tenderness of the style which is admirably adapted

to the tone of the essay. . . . 3. Note how delicately the character of the mother is depicted by reflection in that of the imaginary Alice. . . . 6. Note the classic notion of incarnation at the close of the essay. . . . 8. Observe the undernote of pathos running throughout the essay." Surely these "notes" should be found in another place. To call them review questions is absurd and misleading. We have once before called attention to this slovenliness which mars an otherwise promising series of English classics.

The Plays of Shakespeare. Hamlet. Merchant of Venice. King Richard III. Twelfth Night. Each with an Introduction by Dr. George Brandes. (Heinemann.) 6*d.* each net.—This is a truly remarkable edition at the price. It is a marvel of cheapness. The little volumes are bound tastefully, and printed beautifully on excellent paper. The short introductions will serve to give ordinary readers the information necessary fully to understand the plays. We predict a wide popularity for the series.

History.

The Temple History Readers. Book IV. By M. T. Yates. 384 pp. (Dent.) 1*s.* 9*d.*—Dr. Yates has apparently compiled this book from manuals and other similar works, often quoting openly from them. The text is feeble, and many of the illustrations are no better. The last thirteen pages are given to "chief dates and lines."

Bayeux, its Cathedral and Churches. By R. S. Mylne. xv. + 80 pp. (Bell.) 2*s.* 6*d.* net.—We have quoted the title from the cover: the title-page has a more correct description of the book, viz., "The Cathedral Church of Bayeux and other historical relics in its neighbourhood." It would require much local knowledge and architectural learning to estimate the correctness of the book, but we can vouch for the fulness of information and the wealth and goodness of the illustrations. It is one of a series.

An Elementary American History. By D. H. Montgomery. viii. + 306 + xlii. pp. (Ginn.) 3*s.* 6*d.*—This volume is intended for elementary pupils. It is well written and supplied with abundance of pictures and maps, questions, and an index. The author claims that he has made no mistakes either of omission or inclusion, and on the whole we think his claim is correct.

Geography.

The British Isles. By J. B. Reynolds. 128 pp. (Black.) 2*s.*—This book is profusely illustrated. Some of the pictures are 7 by 4½ inches wide, but, though they are highly decorative and reminiscent of the drawing-room album, we have doubts that they will add much to the geographical equipment of the reader. At the same time, geography as presented by the author is both an entertaining and educational subject, and not the mere exercise of verbal memory it used to be a few years ago. To those teachers of geography who regard their subject as a scientific study the book may with confidence be commended.

New Era Geography Readers. Book II. By Robert Bunting. 144 pp. (Sir Isaac Pitman and Sons, Ltd.) 1*s.*—This is a very attractive and nicely produced reader intended for very young readers dealing with geographical subjects. The type and pictures leave little to be desired, but the book is marred by inaccurate and unscientific statements. Of these two examples will suffice. Under a coloured plate of Worm's Head we find "Mountains and great rocks, like Worm's Head, have been thrown up by earthquakes." Describing a volcano on p. 30, Mr. Bunting writes: "Out of the top of the mountain came streams of fire that ran down the sides, and came towards the town."

An Elementary Class-book of General Geography. By Dr. H. R. Mill. xiv. + 382 pp. (Macmillan.) 3*s.* 6*d.*—A new edition of this well-known class-book of geography will be welcomed by teachers of the subject. The whole book has been thoroughly revised, recent political changes and colonial developments noted, and all statistics brought up to date.

An Elementary Geography of India, Burma, and Ceylon. By H. F. Blanford, F.R.S. xii. + 210 pp. (Macmillan.) 2*s.* 6*d.*—We have here a new edition of a useful book. Several descriptions have been re-written so as to include accounts of numerous important changes which have taken place in Indian geography since the appearance of the first edition of the work. In addition to a new chapter on the N.W. Frontier Province, another has been added on the Laccadive and Maldive Islands.

Mathematics.

Elementary Algebra. Part I. By W. M. Baker and A. A. Bourne. viii. + 275 + lii. pp. (Bell.) Without answers, 2*s.* 6*d.*; with answers, 3*s.*—If the chief aim of a text-book of elementary algebra is to teach the pupil how to manipulate algebraic expressions and to apply his knowledge of algebra to the solution of problems then this text-book must take a very high place. It is written in a clear and interesting style, it is furnished with a very large number of solved and unsolved examples, and it makes a very extensive use of graphical methods, applyihg these to a considerable number of problems that ought to interest the beginner. Except, however, in the use of graphical methods (and this is an important exception) it does not show any important variation from other books in general use. It is, no doubt, a very difficult practical question to decide how far it is wise, or even possible, to present the fundamental laws of operation to the beginner; yet, without such presentation, the intellectual discipline of a study of algebra is greatly impaired. In general, the teaching of arithmetic reduces itself to inculcation of rules, and the same remark is too frequently applicable to the teaching of algebra. In this book, as in most of the text-books in common use, the proofs of the various arithmetical laws are to be given at a later stage; they do not appear in Part I. before us. While fully aware of the difficulty of the question, we think this solution is not adequate. On the plan adopted by the authors, however, the work has been well executed. In chapter xxvii., § 159 should, we think, come first; it should be more clearly stated what types of equations can always be solved by the methods of quadratics, and less attention should be given to methods that are merely special. In the excellent graphical illustrations in § 8 of negative quantities, the line A_2A_4 denotes $4b$, while A_7A_3 denotes $-4b$; but when we come to the definition of coordinates (p. 99) this distinction is ignored. PM and ON are each denoted by 5, though PM and ON are measured in opposite directions. It is, we think, unfortunate that the distinction so clearly pointed out in § 8 is not carried out all through the book; to use a symbol like PM to denote merely the length of a line and leave its sign to be gathered from the context is, we think, an unwise neglect of opportunity, and is on a par with the use of letters to denote numbers subject to the restriction that when the number is negative the minus sign must be explicitly prefixed or gathered from the context. The number of examples is very large; the tendency is to provide too many, though probably most teachers will not agree with us on this

point. We hope, however, that the graphical method will not degenerate to a mere method of problem solving; there are signs of danger in that direction.

New School Arithmetic. Part I. By Charles Pendlebury and F. E. Robinson. xv. + 206 + xxi. pp. (Bell.) 2*s.* 6*d.*—The basis of this book is the sixteenth edition of Mr. Pendlebury's well-known text-book; but while much of the old matter has been retained there have been considerable changes. Of these changes may be noted the more prominent place assigned to the metric system and the simplification of the British system of weights and measures; the exclusive use of the method of multiplication in which the operation begins with the first instead of the last digit in the multiplier, and the extensive use of approximations. Considerable attention is given to the elucidation of the principles of the subject, so that the rules may be the outcome of the discussion, and not mere formulas to be memorised. The book merits the attention of teachers in search of a good book to put into the hands of their pupils.

A New Trigonometry for Schools. Part I. By W. G. Borchardt and A. D. Perrott. vii. + 237 + xiii. (Tables) + xxii. (Answers) pp. (Bell.) 2*s.* 6*d.*—The range of this text-book is that usually referred to as "trigonometry to the solution of triangles and heights and distances." In the treatment of the subject great attention is paid to graphical verification of results, and calculations requiring logarithms are only carried to four figures. These features will receive the hearty approval of all teachers, though it is perhaps unwise to discard altogether the use of seven-figure logarithms. The exposition is in general very clear, and the large number of examples will give ample practice in the manipulation of the various formulæ. If the exposition has a fault, it is that it is too detailed. The least satisfactory chapter is, in our judgment, chapter xi., on the functions of compound angles. We think the general theorem of the projection of a directed line to be so simple in itself and so far-reaching in its applications that it should be made the basis of the proof of the addition theorem; it would be a great gain if geometrical proofs that are only applicable to particular cases were to disappear from text-books and examination papers alike. The authors do not state the source of the tables given at the end of the book; if they have reduced them from larger tables, it is rather interesting to note that two errors occur which are also found in a well-known collection; the differences, too, are, so far as we can judge, the same as in that collection, though they are not always the best. By the way, why do the authors call the sexagesimal method the *English* method? Is it peculiar to England, or was it devised in England?

The Teacher's Blackboard Arithmetic. Part I. By "Tact." 107 pp. (Blackie.) 1*s.* 6*d.*—The author "claims that the general arrangement of his book is new, and that it embodies all the best modern ideas of how to introduce to children in a most interesting and profitable way the Science of Number." These claims are fairly wide, and we do not undertake to say that they are borne out by an examination of the book; but we gladly recognise that the author has written his book from a genuine interest in its subject, and we think that many teachers, young teachers especially, would profit by a careful study of the methods he expounds.

Exercises in Arithmetic (Oral and Written). Part III. By C. M. Taylor. viii. + 132 + 20 pp. (Arnold.) 1*s.* 6*d.*—This part contains exercises on areas and volumes, fractions and approximations, practice, proportion, and examples involving proportion (percentages, interest, &c.). The exam seem to be of a suitable character, mere puzzles and complic fractions being absent from the collection. A good feature the attention given to approximations.

The Elements of Plane Trigonometry. By R. Lachlan a W. C. Fletcher. viii. + 164 pp. (Arnold.) 2*s.*—The gene lines on which this book is constructed are, in our judgme exceedingly good; now that pupils are becoming familiar wi the simpler properties and applications of the trigonomet ratios in their geometrical work, it seems to be wise to st with the general definitions and to advance rapidly to the ad tion theorem. The proof of the addition theorem is based the method of projection which is well discussed in § 10; t discussion would have been still more complete had it be explicitly stated that the projection of PQ is PQcos*a*, ev when the directed segment PQ is itself negative, provided *a* the angle between the positive directions of OX and P When the angles are greater than 90°, beginners often fin difficulty with the addition theorem because they fancy that t theorem that the projection of OP is equal to the sum of t projections of OQ and QP has been established on the sup sition that OQ and QP are positive segments, a supposit that needlessly restricts the generality of the theorem. T discussion of the solution of triangles is an admirable piec work, and the method of practically carrying out the calc tions is a model that may be heartily recommended to teach The later developments in the book, De Moivre's theor Series and Products for the sine and the cosine and kind subjects, are skilfully presented, but the proofs are lacking the rigour that should, we think, be aimed at in modern t books; it is only fair, however, to state that the authors s in these sections to aim rather at securing practical familia with the results than at providing proofs that are mathematic rigorous, and that should certainly be required of students make a speciality of mathematics.

Beginners' Trigonometry. By M. S. David. ii. + 11 16 (blank) pp. (Black.) 2s.—This is an excellent book, suitable in every respect as an introduction to t nometry. We think the author acts wisely in giving general definitions of the trigonometric functions at the ou but confining himself to acute angles till the pupil has g some familiarity with the new symbols. The book conta good chapter on logarithms; here and elsewhere mu omitted that the pupil has, or should have, learned elsew The exercises are quite numerous enough, and they are of a suitable for the beginner.

Woolwich Mathematical Papers. Edited by E. J. Br smith. (Macmillan.) 6s.—This collection includes the p for admission into the Royal Military Academy for the y 1894-1903. It is interesting to compare the later with earlier papers. The collection will doubtless prove service to many teachers.

The "A.L." Problematic Arithmetic. Scheme B. (L Arnold.)—Books for Standards I. to VII. containing *prob* in arithmetic rather than *sums*. At bottom, of course, material is the same as in other books, but there is a variety and possibly stimulus caused by the persistent recurr of "how" rather than "add." There are seven books con ing respectively 24, 32, 36, 46, 48, 52, and 48 pages, costing 1d., 1d., 2d., 2d., 2d., 2d. and 3d.; they are printed.

Miscellaneous.

Joseph Lancaster. By David Salmon. 76 pp. (Longmans.) 1s. 6d. net.—Mr. Salmon has made a careful study of his subject, a study which has extended over many years. The result is that the facts have been brought together, conflicting statements previously made sifted, and material offered for the formation of a judgment by the reader himself, though Mr. Salmon is usually ready to say what his own opinion is. The rivalry between Bell and Lancaster is well described, and an account is given of Lancaster's remarkable "success," and his equally amazing "eclipse." Interesting sidelights are given on the current pedagogy of the times, and Mrs. Trimmer, for instance, once more comes to the front. It is certainly surprising to find how much Mr. Salmon gets into this little book. A glance at the index suffices to show that the book contains much to interest the educationist. The list of authorities is a piece of most careful and effective labour, and will be necessary to all whose studies lead them to a consideration of Lancaster and early English elementary education in his times. Mr. Salmon's estimate of Lancaster seems to us high, though incidental references show that Mr. Salmon is alive to the adverse criticisms that can be offered with regard to Lancaster's system. Mr. Salmon writes very carefully on some points. For instance, when he tells us that Lancaster introduced "slates" into his school, he adds that Sir Thomas Bernard states that "for the general use of slates we are indebted first to Mr. Lancaster," whilst Buisson informs us that Pestalozzi was the earliest to employ them. It would be interesting to find if there is not an earlier mention than even Pestalozzi. Mr. Salmon gives five illustrations to his book, a portrait of Lancaster, an illustration of a monitorial school from Hamel, of Lancaster's monitors' badge, a reduced facsimile of a part of a letter, and a view of the old Borough Road British and Foreign School Society's premises. Mr. Salmon's book is a capable piece of work, and should command the attention of all interested in the educational movements of the early part of the last century.

Blundell's Worthies. By M. L. Banks. xv. + 220 pp. (Chatto and Windus.) 7s. 6d. net.—This book consists of some twenty-five sketches of old Blundellians, or of men like Sir John Popham, who were otherwise closely connected with the school. In three centuries a great school is sure to produce many men of merit whose lives are interesting regarded from any point of view. The papers which make up the present volume are, however, rather short and summary, and give little scope for those direct quotations from old records which are so helpful in reconstructing the past. They show, nevertheless, a considerable amount of research, but are not without inaccuracies (*e.g.*, Dr. Besby, p. 41). The style of some of the essays is poor; that on the Chesneys (p. 132) offends by a foolish air of smartness. One or two of the characters deserve a mention. Everyone knows that Archbishop Temple was an old Blundellian; not all know that the same is true of Sir C. T. Trevelyan, R. D. Blackmore, dear old Jack Russell, and that extraordinary creature, Bampfylde Moore Carew, the King of the Gypsies. If this remark induces any reader to dip into the last-named worthy's biography, he will be well repaid for his pains, and will bless the name of Mr. Banks. In conclusion, we can assure old Blundellians that this book is worth their buying. We hope that some day Mr. Banks will give us a *History of the School* itself, for which we prophesy a ready sale.

Elementary Principles of Economics. By R. T. Ely and G. R. Wicker. vii. + 388 pp. (Macmillan.) 4s. 6d. net.—This book comes to us from the United States of America, and, though there is no preface, we gather that it is intended for use in schools. If so, we think the authors have a somewhat too high opinion of school boys and girls. It is an excellent manual of the subject, introducing the latest developments in economics, and treating not merely of distribution, but also of international commerce, finance, &c. Each chapter is summarised, and there are questions, bibliographies and lists of subjects for essays.

A Philosophical Introduction to Ethics. By W. R. B. Gibson. viii. + 223 pp. (Sonnenschein.) 2s. 6d. net.—This book consists of a series of lectures delivered at Westfield College last year. It is avowedly polemical, being described as "an advocacy of the spiritual principle in ethics from the point of view of personal idealism," and directed mainly against Prof. Taylor's "Problem of Conduct" and Green's "Prolegomena."

The Romance and Realm of Commerce. By Alfred Morris. 159 pp. (Nelson.)—Mr. Morris has an enthusiastic belief in the advantages of a commercial career as a vocation in life. "Many merchants become millionaires, but very few professional men do so," "Moderate success in a profession rarely means as much leisure or lucre as in business," are expressions of opinion which serve to indicate the standard used by the author to measure success in life, a criterion which will by no means satisfy the conscientious educator. But this worldly ideal notwithstanding, Mr. Morris has much of value to say on "commercial" education, and his advice on many questions should be of help to parents and sons to whom the book is addressed.

A General View of the History and Organisation of Public Education in the German Empire. Translated from the German of Dr. W. Lexis, by Dr. G. J. Tamson. iv. + 182 pp. (Asher.) 3s. 6d. net.—This book, which is issued only in English, is an extract from a work on German education, edited by Dr. Lexis with the assistance of a large number of collaborators, for the International Exhibition in St. Louis. The student of education anxious easily to acquaint himself with the leading facts in the history and development of the educational system of the German Empire should procure the volume. The subject is treated under the following headings: Universities, secondary schools, girls' schools, elementary schools, training colleges for elementary school teachers, technical high schools, high schools for special subjects, and middle and lower professional schools.

Tolstoy as a Schoolmaster. By Ernest Crosby. 94 pp. (Simple Life Series: A. C. Fifield.) 6d. net.—What a great and original thinker like Tolstoy did during the years he indulged in schoolmastering is worth consideration from practical teachers. Mr. Crosby gives in an interesting way a graphic account of a series of novel educational experiments. Though it is to be feared that a repetition of these precise experiments would lead to anarchy in British school-rooms, there is a moral attached to each of the results reached by Tolstoy, and we commend this booklet to the attention of our readers.

Matriculation Directory. No. XXXVII., June, 1904. (University Correspondence College.) 1s. net.—It is difficult to believe that an intelligent youth who honestly carried out the instructions in this very full guide to matriculation at the University of London could fail to pass the examination.

Common Thoughts on Serious Subjects, being plain words for boys. By Chester Macnaghten. With an Introduction by Robert Whitelaw. xxxv. + 228 pp. (Unit Library, Ltd.) 2*s.* 6*d.* net.—The late Mr. Macnaghten, who was the first principal of the Rajkumar College of Kathiawar, the first college founded in India for the education of young chiefs and princes, performed a peculiarly difficult task with consummate ability and remarkable success. The story of his unostentatious triumphs is told sympathetically by Mr. Whitelaw. These addresses, delivered though they were to non-Christian audiences, contain just that moral training which is essential to developing youths, whatever the religion of their country may be. We recommend all whose duty it is to address young people on such subjects to study the volume.

The out-of-the-way book is often excellent, but it demands the out-of-the-way teacher. Sonnenschein's *Spelling and Dictation Book* (Routledge and Swan Sonnenschein) has a valuable preface on the correlation of studies, but the very first reading sentences containing the literary words "fondle" and "addled" seem to us unnecessarily hard; and what will an East-ender make of this, "As I went —— the butcher's shop the man shouted ——;——, —— !" even though "by" and "buy" are printed above it. Sonnenschein's *Second English Reader* (1*s.* 3*d.*), has an admirable preface, and the matter is excellent. *Spelling for Adults* (Philip, 3*d.*) suggests a fresh method of dealing with spelling difficulties. Pitman's *Lessons in English*, Book II., 3*d.*, is quite as full of —— as the little book noticed above, and again we question the wisdom of asking children to read, "His beard is black and b—y," but the book is suggestive, and its methods have been known to succeed.

The *Royal Alphabet School* (Murby), Primers II. and III., is very ambitious, for it contains reading, recitation, writing, drawing, and Pitman's shorthand in one. There is no objection to this if it be clearly understood that the rhymes are only mnemonical. The artist has unintentionally given publishers a valuable hint, for on p. 22 (Primer III.) there is a picture of a child deep in a paper-covered folio which is labelled "History of Scotland, with 11,000 coloured illustrations." When will any publisher produce so desirable a history of Scotland or any other country—*in folio, too?*

The *Ludgate School Books* ("Children of the New Forest," 1*s.* 6*d.*, and "Round the Coast," 1*s.* 6*d.*) are praiseworthy attempts to bring good literature into schools and to correlate literature with geography, but if the publishers could make the books less "schooly" and could round the edges, what a far greater debt would be ours. In "Round the Coast" it is a pity that a prose quotation from the "Merchant of Venice" (p. 50) should be printed as verse, and on p. 129 "Owen's" College should be corrected.

Arnold's *Home and Abroad Readers*, Books I.-VI. (Edward Arnold) take a fine long step in the right direction. Neat, admirably illustrated, and always interesting, they carry out fully the author's aim, "to draw attention to the physical characteristics of a country and to connect them with the life of the people, to encourage the pupil to read the map, to interest him a little in the history and modern position of the country, and to give him information of the great political and commercial activities of the modern world." When Messrs. Arnold or any other publishers print such books in quarto or folio, enlarge the series of six into sixty, and still on the same lines add hundreds of illustrations and authentic descriptions from works of travel, we shall be very near to our ideal School Geography.

CORRESPONDENCE.

The Editors do not hold themselves responsible expressed in letters which appear in these rule, a letter criticising any article or re THE SCHOOL WORLD *will be submitted t before publication, so that the criticism appear together.*

The Suggested School Certificat

A YEAR ago I wrote for THE SCHOOL WOR "London University in Relation to Schools"; mission I should like to point out what progress during the year towards the attainment of som which I then mentioned as being desirable.

To begin with, I believe that the Universities sidering the question of accepting, at any rate ir change of certificates which each at present ac the first University Examination. This, thou lessen the number of *Certificate Examinations*, greatly decrease the amount of extra work i where boys are prepared for the different Univer

The next advance is the attempt which the Co mittee of the Board of Education is making to acceptance by the different learned professio Certificate in lieu of their entrance examinatic though this is not definitely stated, that this ce the same as that which excuses the first Universi If this attempt is successful we shall at once de ber of examinations, and at the same time prev interests and waste of teaching power which at the work of the higher Forms in our schools so Consultative Committee seem to have approach a broad spirit and with a desire to recogni schools have different aims, while at the same t of those employed in teaching is to have consid deciding the fitness of the candidates for obt cate. Further points which are distinct adva methods are the co-operation of teachers and setting of the papers; in the conduct of the o examinations; no set books in language examir insistence on school inspection as a prelude to t amination.

Before this scheme is finally settled there points which might, with good effect, be taken tion. First and foremost would be the questio which must be demanded for the certificate. made compulsory and what optional? Herein greatest difficulties, because we have to meet th of the classical, modern, science, and engineer schools. The relative value to be attributed language will be a fruitful source of trouble, but whatever the standard fixed, English will receiv the compulsory subjects, and that those school ticular stress upon their science teaching will be a sound knowledge of at least one language in own. Then comes the question of the times a aminations are to be held. The present custon Higher Certificate Examination at the end of t is fair neither to pupils nor teachers, and is a su custom of concluding the summer term in the As set books have been discouraged, let us hc catch questions on words of little use and infrec may also be consigned to oblivion, and their questions which will tend to encourage a knowle

ire of the language under examination. The Consultative ommittee seem to have lost an opportunity when they defined e qualifications of certain examiners. Why should they not sist that a proportion should be registered in column B instead saying that they must be "teachers" or "contain an ademic element," whatever that may mean?

In conclusion, I would sum up the points which last year were y suggestions and this year have advanced to the position of ig under consideration.

(1) The interchange of certificates by the Universities.

(2) The acceptance by the learned professions of school certificates in lieu of their entrance examinations.

(3) The co-operation of teacher and examiner.

(4) Oral and practical examinations compulsory.

(5) No set books.

(6) The inspection of schools as a necessary preliminary to granting certificates.

et us hope that another year will see these points established in addition an advance made towards—

(1) A decrease in the number of certificate examinations.

(2) A scheme of subjects for examination sufficiently broad to cover all types of curricula, but demanding rather a thorough than a specialised education.

(3) A better arrangement of the times at which examinations shall be held.

(4) Registration under column B as a necessary qualification for certain of the examiners.

Ealing, W. T. WIDDOWSON.

August 8th, 1904.

Discipline in the Laboratory.

A RECENT experience has set me thinking as to the best form of class government for the classes in practical chemistry and practical physics for which I am responsible. An inspector who visited the laboratory to pass judgment upon my work, expressed his surprise that I made no attempt to stop quiet talking on the part of the boys, and discreetly expressed the opinion that I was scarcely a "disciplinarian."

This quiet talking was, I admit, fairly general, and it does not surprise me that an onlooker, who did not take care to acquaint himself with the subject of the boys' conversation, should be a little shocked at the apparent "slackness" in school work.

But in point of fact the talking in the laboratory, of which the inspector disapproved, is not only condoned but encouraged by me. At the beginning of my experience I insisted upon absolute silence, and considered it as subversive of good order to allow talking in the laboratory as in say the mathematical classroom. But the result so far as practical work in science is concerned was not encouraging. There was silence it is true, but it was rather the silence of apathy and want of interest. The boys, continually observing phenomena and obtaining results new to them, were unable to give any expression to their natural surprise, and soon ceased to observe with interest sufficient to arouse any sort of enthusiasm. It was not long before the chief problem which confronted me was how in some way to arouse at least a measure of interest.

These results led me to experiment in the matter. I found soon that two intelligent boys working together and permitted to direct one another's attention to any results in connection with the work in hand, were ready to continue their practical work with enthusiasm as long as I would let them. They had no desire to remain idle and were continuously interested. Similar results followed other experiments, until now I have formulated the rule that so long as boys are talking quietly about their work there is no question of breaking rules. What has been the result? The work is done better; the boys are more interested; the work is remembered and better understood. But there is the fact remaining that the casual visitor fancies I am unable to keep the boys quiet even though I wish so to do, and the occasional inspector is liable to dispose of me as a weak disciplinarian.

If other science masters could be persuaded to send you the results of their experience in this direction, and these should prove to coincide with my own, it may prove possible to educate inspectors up to the idea that cast-iron rules as to talking are quite out of place in a laboratory. At any rate, it would be of real value to me to know what other science masters are doing, so that if necessary I may revise my methods of procedure.

SCIENCE MASTER.

August 8th, 1904.

Flotation Experiments and a Simple Hydrometer.

A PIECE of wood about a foot long and about a square inch in cross-section is divided on one side into some convenient divisions, *e.g.*, cms. It is then varnished, or rendered waterproof in some other way. A piece of lead is then affixed to the bottom (preferably let-in in such a way as not to interfere with the divisions already marked off), of such a weight as to make the wood float upright in water. It is well, too, to test it to see if it will also float in methylated spirit or some other liquid which is lighter than water. If preferred, the lead can be affixed first and then the divisions marked off.

We can now perform the following experiments:—

(i.) Float the instrument in water, and suppose it is immersed up to the mark 20. Then, since its whole length is 30, its relative density is 2/3 or 0.'6.

(ii.) Float it in blue vitriol solution. Let it be immersed up to the mark 16. Then, from (i.) the relative density of blue vitriol solution is 20/16 or 1·25.

(iii.) Float it in a measuring-jar and note the rise, so finding its weight in grams. Now push it under completely and note the total rise, so finding its volume. Suppose first rise is 200 cc. and total rise 300 cc., then density is 0.'6 grams. per cc.

(iv.) Float it in a measuring-jar containing blue vitriol solution and note rise, say 160 cc. Hence from (iii.), the relative density of the blue solution is 200/160 = 1·25.

Attempts to find the density of other substances by using the instrument, lead to the idea that it would be well to fasten a receptacle of some sort both to the top and bottom. A tin lid does very well for the top and a light pan of zinc foil or copper foil can easily be made and wired on to the bottom. The latter need not of course be water-tight.

It is not necessary to have divisions marked in this case, nor need lead be affixed, provided the lid and pan are sufficiently heavy to make the wood float upright.

Such an instrument does perfectly well for a Hydrometer. Its cost is certainly not more than 3d., and it gives practically as good results as a Nicholson's Hydrometer, while its educative value is certainly greater.

C. H. COX.

Tottenham Grammar School.

Instruction in the Laws of Health.

IN the reorganising of the educational systems of the country a great deal of attention is being directed to the adequate training of the teacher, and the Council of the Sanitary Institute desire to urge the necessity of giving a prominent place in this preparation to some practical training in the appreciation of the

health conditions essential for carrying on the work of instruction.

Ever since the passing of the Education Act in 1898, the Institute have urged upon the school world the value and importance of hygiene as the basis of education, and they appointed a committee of experts, consisting of medical officers of health, engineers, architects, and others, who have given attention to this need of systematic application of hygiene in school life, to draw up a syllabus, indicating the points that should be comprehended in the training of all teachers.

The teaching of the laws of health in schools will have little effect in training the scholar in the observance of these laws unless they are observed and practised in the conduct of the school, and such training can only be accomplished where the teachers have themselves been trained by practical and experimental work to understand:—

(1) How the laws of health enter into every department of school life, the mental and moral as well as the physical; and

(2) That the subject is one that must be inculcated in the child by observation and experiment.

The regulations issued this month by the Board of Education for the training of teachers sum up the professional training with the following very satisfactory recommendations:—

"The students ought to have an adequate knowledge of school hygiene. They should understand the general conditions necessary for making a building or a room healthy and for keeping it so, and they should be well acquainted with the rules of personal health, and, so far as possible, with the physiological principles upon which these rules are based. In the case of women students, the nutritive value of food-stuffs in connexion with their cost in the market and in relation to the needs of young children should be known in outlines, even though the student may not be specially qualified in domestic economy. Only thus will they know how to conduct the school as a whole with the greatest profit to the health and bodily development of scholars, and how to adapt the instruction to the limitations which are imposed in some cases by the feeble health of the children or by the poverty or neglect of their parents."

In the prefatory memorandum to these regulations it is also urged that every training college should attempt to conduct its instruction in such a way that there shall be in the case of each student some range of knowledge within which there is no fact and no inference from fact that has not been subjected to the severest tests at his command.

No subject offers a better field for this progess of tested knowledge than the subject of hygiene, for, while it affords excellent opportunity for practical work in testing methods, it co-ordinates with nearly all other branches of the teachers' work, and affords an amount of diversity and adaptability which would make its adoption practicable in nearly all colleges, and, if adopted, would give a living groundwork to educational methods, which to be successful must be based on the conditions of health essential to carrying on the work of instruction in schools.

Experience, however, has proved the practical advantage of subjecting recently-acquired knowledge to the test of examination, and with this end in view the Council of the Sanitary Institute initiated an examination in applied hygiene for school teachers, which has already been adopted and made the focus for the training of teachers under some of the county councils.

If, in the preparation or carrying out of any scheme, the Institute can, by this examination, or by co-operation in any other way, be of use in furthering the desired end, my council would be very glad.

E. WHITE WALLIS.

The Sanitary Institute,
London, W.

MUTUAL AID.

THE object of these columns is to afford teachers the opportunity of asking questions of and giving assistance to colleagues. The questions received to which replies are solicited will be printed first; following these will be the answers which have been sent in, and, to make such replies intelligible to all readers, they will be accompanied by the question.

Readers are invited to send answers to any of the questions asked below by our correspondents.

The questions should deal only with educational matters, using the expression in a broad sense, and the publication or otherwise of any question must be left entirely to the discretion of the Editors.

Questions and answers should be addressed to the Editors of THE SCHOOL WORLD, St. Martin's Street, London, W.C., and should be accompanied by the full name and address of the sender, though not necessarily for publication. Each question or answer should be on one side only of a separate sheet of paper.

QUESTIONS.

A CONSTANT READER. I saw recently a notice of a new English grammar for children, written in the form of easy stories or lessons. I cannot trace it. Can any reader help me to find it? The only child's grammar written in the same style that I know is Mr. Marcet's, published by Messrs. Longmans. Are there any others?

E. P. How can my new cinder playground be got to "bind"? It is on a slope. It was laid down with eight inches of broken bricks and four inches of cinders.

W. J. T. Would some reader, with experience of school dramatics, suggest some plays or portion of plays suitable for production in a mixed school?

M. REGIS, Ghent.—Can anyone tell me where I can obtain English translations of the following books: "Les fâcheux," by Molière; "Siècle de Louis XIV," Voltaire; "Scenes of Travel," Gautier. I shall also be grateful for the name of a good history of French literature suitable for pupils preparing for the Oxford Higher Local Examination.

C. H. C. Where can I find descriptions of: (i.) Apparatus for finding the specific gravity of a volatile liquid. (ii.) The method of preparing a "constant volume specific gravity bottle" by adding a certain amount of mercury to an ordinary density bottle, so that its expansion counteracts that of the bottle?

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Scholar of Pembroke College, Cambridge; Assistant Master at Tonbridge School.

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Clifton College.

s tongues in trees, books in the running brooks, ons in stones, and good in everything.

HOUGH, no doubt, there are notable :amples to the contrary, science, I fear, ıs hitherto been conspicuous chiefly by its in the curricula favoured by most pre- schools. And, after all, much as many ɣret that this should be so, and conscious 'e of the loss involved, this circumstance for the moment without its advantage. rants us to-day at least a clear field for since the schools are not, as a whole, :ommitted to a system that is bad, and ıources, even if they have not made the hem in the past, at least are not mortgaged uture. All the world of science lies before .ey can choose what they will.

ıough the mistakes of the past, for which, s, we have paid and will continue to pay y, even though that penalty be invisible to ıs, have their compensating advantage, the situation is by no means free from danger. l easily be seen by any one who will glance truly deplorable paper of questions in which was set at the Joint Entrance ation for the Public Schools only a few go, and, as we all must feel, most properly ed in the pages of *Nature* by Mr. Latter, terhouse, on July 7 (p. 223). For it is that if work along the lines suggested e questions should gain a footing in our :ory schools, it would constitute a mis- of the gravest kind, for the preparatory for the public schools—in short, for every cerned. Fortunately, we may hope that lelinquency as the setting of this paper to ttle boys is not likely to be many times l. The masters of the preparatory schools we know, on the alert, and the question of for the younger boys forms, at this :, one of the chief preoccupations of the Schools Science Masters' Association, ıas appointed a strong Committee to con- he question. It is understood that the Report of this Committee will very soon come up for discussion; and meanwhile the general tenour of the opinions expressed on the subject at the Science Masters' Conference at Westminster in January last (in spite of the fact that a few of the speakers seemed a little ready to bless anything, good or bad, if it were but labelled "Nature Study") gives us warrant for believing that opinion among the members of the Association is, on the whole, in a thoroughly sound condition.

I am afraid it must be admitted that the preparatory schools have not, in the past, had very much real help or support on the subject of science teaching from the masters of the secondary schools. Just as the universities, the War Office, and other similar bodies have influenced the work of the public schools, and inadvertently, I sometimes fear inevitably, stood in the way of progress at times, partly by reason of the rigid character of many of the syllabuses laid down for the candidates, and still more owing to the character of the examinations themselves; so under the scholarship system the public schools have, in their turn, influenced the work of boys at the still earlier stage of the preparatory school. Inevitably, in scholarship examinations, the science masters have sought to discover the boys most likely to gain fresh laurels in yet other competitions. Inevitably, this being their quest, their influence, so far as they have exerted any influence, has tended to direct the work of the average preparatory schoolboy to those subjects, or parts of subjects, which belong by rights to the later stages of the educational course, and thus has tended to discourage science altogether in the work of the average junior and to direct the energies of the more clever or more precocious boys into channels which, though seldom, I believe, positively injurious to these latter boys, are not in reality the best they might have followed.[1]

But now let us cease to look backwards, and cast our glances towards the future. "What," I am asked, "are the lines along which the public-school science masters would prefer that the boys coming to them should have been instructed?"

It is very difficult for any one master, however intimately he may be acquainted with the trend of public-school opinion, to speak for all. Therefore

[1] I write, alas! as one of the offenders.

I address myself to the task of answering this question with some hesitation, and am glad to know that we may hope—and hope confidently—soon to have the outcome of the conferences of the Science Masters' sub-Committee to help us to plant our feet wisely at this critical moment. But, meanwhile, I think that the general opinion is already sufficiently formed to make it safe and reasonable to put forward, at any rate, some leading conclusions on the subject. And first, I would say that it is pretty widely felt that what matters most is not so much what science subjects are taught in a preparatory school as how they are taught and by whom they are taught. It is not, for example, of the very first importance that a boy shall study, let us say, chemistry or physics before he come to a public school at about thirteen or fourteen years of age, provided that his school work has included such an element of Nature study—I use the term in its widest sense—that his natural inquisitiveness about the world he lives in and the heavens round about it has not been allowed to grow dull, through want of opportunity for the exercise of his power of observation, his imagination, and of his budding capacity to make an experiment. And similarly, on the other hand, where circumstances are very unfavourable to field work or garden science, or such that at best these can only be carried out intermittently, then, at any rate, a great deal can be done in a chemical or physical laboratory, or, better, in a laboratory that is not exactly the one or the other. But if laboratory work is to be really valuable at this stage, the boys must make the experiments and find out for themselves, so far as possible, the uses and defects of their hands and eyes, of glass and cork, solids, liquids and gases and all the rest; must learn how to make simple instruments and how to use them; and, above all, learn from the first that knowledge—real knowledge—does not come from reading books or solving numerical problems, or from listening to lectures, good as all these may be in their place, but from the using of hands and eyes, exercising the imagination and making experiments. If boys come to the public schools having grasped these ideas, interested in observing natural things, interested in experimenting, and willing (I will not say, able) to *try* to describe correctly what they see and do, and if they have not had difficulties smoothed before them to such an extent that they have lost whatever endowment of pertinacity they may have started with, then it does not matter very seriously what science subjects or what parts of science subjects they have studied.

But whilst much can be done in towns, far away from fields, hedges and brooks—under such conditions, for instance, as those which impeded the science masters at Christ's Hospital until a year or two ago, where, latterly, great things were done in the face of great difficulties—yet I think most of us would take our stand on the quotation which I have placed at the head of this article. Laboratory work should not be altogether omitted even in the preparatory school, but fields and trees, brooks and their inhabitants, stones a the stars should take the first place.

Subject, then, to what I have said above, I not think the public school science masters a class would wish to dogmatise in the matter the choice of subjects. And most of them wo I believe, subscribe heartily to the advice of former Chief of mine when he said: "Get t best man you can, taking care that he is enthusiast. Find out what he wants to teac and let him teach it." To that I would add, gi him, especially if he has to teach very young boy the utmost freedom that circumstances permi provided that you believe him to be sound in t objects he desires to attain. Above all, be caref whom you select as your inspector, if unhappi you must have an inspector, for no progress c be made if the teacher and the inspector pu in diametrically opposite directions.

On the other hand, when we come to t question, how should science be taught in a pr paratory school? I think our ideas already take somewhat more definite form. In the first plac whatever the subjects selected may be, the lesso must on no account encourage the mere accum lation of knowledge, of merely systematised fac The need for these is not yet. Mere knowledge *not* power, in spite of the adage, any more than cannon ball in a cart, or a stone in a hollow the hillside, is energy. What we want to e courage is power, the power to use knowledge; t power, as I said before, to see and think truly, an to describe. Those who are beginning to do thes things will soon understand the use of knowledg and set about getting it for themselves. Therefore what we want the preparatory schoolmaster to d is to send us boys who can see, think, make experiments, and describe, or, at least, boys who hav learnt that they must try to do these things. Wha the public schoolmasters have to do is to send thes boys on to the university or into the world still better trained to see, think, experiment and de scribe over a wider field; and the task of the university, if I may say so, is after all again the same. At every one of these preliminary stages of life we must be on our guard against the glorification of mere knowledge, and especially o second-hand knowledge, though this also at the later stages plays a useful though humble part.

A few days ago, walking through the streets o a country town with a distinguished German ma of science, I directed his attention to the name o Faraday over the window of the local pharmacy "Ah," he exclaimed, "*he* was the greatest of all. I think we schoolmasters should never forget tha Faraday, "the greatest of all," very rarely mad use of second-hand knowledge. He could never as he said, feel that he understood a new phe nomenon till he had repeated it and seen it fo himself. Lectures to young girls or boys are onl good, I believe, just in so far as they foster in th hearer a desire for first-hand knowledge and add t his or her power of getting it. The lecture which does not sooner or later impel the girl or boy to wor in the garden, in the field, or in the laboratory, has

failed to achieve what should be its main purpose. Lectures, therefore, should be employed as sparingly as may be in the case of the young, and should *never* conform to the didactic type. If given at all, they should suggest enquiry and modes of enquiry, not simply embody the story of other people's doings. Though the teacher must lead, on no account may he do the pupil's work. In fact, he cannot do this, try as he may. Education, as Mr. Bateson said in Cambridge the other day, is but the giving or withholding of opportunity. If we want to produce workers, we must give opportunity for work; we must set a good example by working ourselves, but we must never do the pupil's work for him. Mistakes on this point produce disaster at every stage, but most of all at the beginning. It has, alas! been the great fault of most of our elementary examinations that by asking too much they have forced many teachers into this most fatal error. The science-master in a preparatory school is more happily placed than many of his colleagues; owing to the fact that science is not, as a rule, at present "required" for entrance to the public schools, he is more free than many of us to adopt sound methods. It should be the care of those who may examine in the future to preserve for him this freedom.

It is always easier to suggest what should be avoided, especially where the conditions vary, than to propose a scheme that will be satisfactory for all. It would be particularly unwise, I think, to attempt this latter task at a moment when the collective wisdom of my colleagues is about to make itself heard. So I shall conclude these remarks by saying that I think it is felt pretty generally that definite cut-and-dried courses of work on definite subjects, such as botany, zoology, physiography, or on definite sections of such subjects, should be avoided, and that courses of systematic work in qualitative chemical analysis and allied departments are inadmissible. All these, though good in their place, are out of place in the preparatory school. Finally, whatever may be done in the way of chemical or physical experimenting, and these should not altogether be neglected, should rather follow than precede natural history in its various branches. Holiday tasks in science, if there be any, should never consist in the mere reading of books.

I fear it will be complained that in making these remarks I have altogether, or almost, forgotten the existence of girls. This is not so. If the opinions of a man on the education of women are of any value, mine are to be found in the previous columns. But in view of the somewhat greater readiness of girls to value lessons taught in school, I should wish what I have said to be emphasised in their case by the use of italics.

From seeds in the same pod may come sweet peas climbing five feet high, while their own brothers lie prone upon the ground. The stick will not make the dwarf peas climb, though without it the tall can never rise. Education, sanitation, and the rest, are but the giving or withholding of opportunity. Though in the matter of heredity every other conclusion has been questioned, I rejoice that in this we are all agreed.—W. Bateson, F.R.S.

CHEMISTRY OF DAILY LIFE.—I.

By F. R. Leyland Wilson, M.A.
Charterhouse.

THE great advances in scientific knowledge of the last fifty years have only lately begun to be reflected in the character of the education supplied in secondary schools.

Elementary Science has had a position in curricula for a long time, but it has been given none of the advantages of time and opportunity allowed to older subjects of instruction.

Public opinion is better educated than it was, and the claims of science as an instrument of education are now recognised by many important examining bodies.

This is unfortunately not so in the case of the old universities, which refuse to admit elementary science as a subject for their entrance examinations, with the result that the science work has suffered both at the public schools and the universities. London University, on the other hand, has for some time past required a modicum of elementary science from those who matriculate, and a course of laboratory work based on the latest syllabus may be made of great educational value. The examinations for entrance to Woolwich and Sandhurst stand on a somewhat different footing. The studies at these places are definitely scientific, and a good unspecialised school-course of elementary science forms a valuable foundation for the more specialised work which is to follow.

Anyone who has had much experience in the teaching of elementary chemistry knows that the systematic treatment of the subject is unsuitable for beginners. Boys are unable to digest properly the mass of new and strange facts supplied by a course of lectures on the "Chemistry of the Elements," and a course of practical work of which qualitative analysis forms the basis, too often degenerates into a slavish routine.

It is a satisfactory feature of the new examination schemes for entrance to Woolwich and Sandhurst, and London University, that this kind of work is no longer required; moreover it is possible as a result of the recent changes to adopt the same course in preparing candidates for both these examinations.

I suppose that all good teachers of elementary chemistry make use of "heuristic" methods, although the extent to which the element of research is introduced must vary greatly. If a course is to be adopted in which the boys are required to observe and find out the causes of phenomena for themselves, the material on which it is based must be drawn so far as possible from familiar things—material which can best be found in the phenomena of everyday life.

In the syllabus for the London Matriculation a section is included entitled the "Chemistry of Daily Life," the greater part of which will be found suitable for elementary treatment, and it is proposed in a later article to sketch out a course

of elementary chemistry the basis of which will be the chemistry of common phenomena such as are met with from day to day. The object will be to supply an educational course suitable for candidates for the London Matriculation and for the Army Entrance Examination, and one which may be used as a foundation on which the more systematic study of chemistry can be laid.

Now the value of an elementary course of science ought to be gauged entirely by its advantages as an educational instrument, and I believe that a treatment of the subject which is largely practical in character, fulfil such a function remarkably well. A course of this kind is well adapted to cultivate habits of careful observation; moreover, the apparatus required may be of the simplest kind, and such as can be devised and set up by the boys themselves. Simple experiments involving the measurement of weight and volume are possible, and the results obtained by the class may be used to illustrate important principles such as the indestructibility of matter, etc.

A variety of problems of a simple kind may be investigated, and they will be found to develop a spirit of inquiry, and to create the greatest keenness. Although a course such as this, in which the greater part of the time is devoted to practical work, has many advantages, there are certain dangers which require to be guarded against carefully if the best results are to be obtained.

Boys are very impatient to get on, and it is necessary to adopt some means to ensure that the bearings of an experiment and the conclusions to be drawn from it are thoroughly grasped. The discussion of the results obtained by the class at the previous lesson may be made a means to this end, although this alone is not sufficient.

I find that a good way of ensuring that a proper amount of thought is devoted to the work is as follows: Before an experiment is begun a few simple questions are set bearing on the subject under investigation. As soon as the answers to these questions have been written down in the laboratory note-book, the experiment is carried out, and the observations are recorded.

A further set of questions is then given, which may be answered as preparation work. Let us suppose that "Burning" is the subject for inquiry, and that the combustion of magnesium has been selected as the particular example for experiment. Before the work is begun, the boys are required to write down answers to the following questions, the object being to cause them to collect their ideas on the subject of burning:—

(1) Give a list of all the things which you have seen burning, classifying them according as they are solids, liquids, or gases.

(2) Is a flame always present during burning?

(3) Mention some different ways by which things may be caused to burn, giving examples.

(4) Does a thing vanish completely when it is burned, etc., etc.

The experiment of burning magnesium is then done, and an account is written down in laboratory note-book.

Conclusions which can be drawn from the periment may be written as answers to following questions:

(1) Are the properties of magnesium and its ash the same? Compare them.

(2) Was the whole of the ash collected not, what became of a part of it?

(3) Is the magnesium contained in the a or if not, what has become of it?

(4) Is the ash likely to be of the sa weight as the magnesium?

Several practical problems arise out of th questions; for example, the boys are required devise a method of burning magnesium a collecting the whole of the ash formed. The n experiment would be to find out if the magnesiu gains or loses in weight when it burns, &c., &c.

I have gone into this point at some leng because I know how difficult it is to make bo think about the work, and have found that sor system such as that described is an effective mea of ensuring that they shall do so.

The teaching of elementary science in schools often hampered by the shortness of the perio of time allowed for lessons. This difficulty is m severely felt if the work is chiefly carried out the laboratory, when the usual one-hour peri will be found to be quite inadequate; not l than one and a-half hours should be allotted fo lesson in practical work.

I have found it a good plan to allow boys work in pairs, and have never found that discipli suffers by allowing quiet talking about the wo

One of the difficulties of a practical course is t variety in the speed of work of different memb of a class. By adopting the system of working pairs I find that this difficulty is to a certa extent overcome. The question of allowing b to work in pairs was raised by a correspondent the last number of this Journal. I think that a one who has tried the system will agree that t work gains in every respect by its adoption, a that boys stimulate one another's interest talking about their experiments.

I suppose that everyone must devise his o method of marking practical work, and it certai is not easy to find a method which is altoget satisfactory. A system of laboratory notes n be adopted; these notes may be written out sub quently in a "fair" notebook. The laborat notes can be rapidly marked *a*, *b*, *c*, or *d*, accord to the care with which they have been ma whilst the "fair" notes and answers to questi may either be marked in the laboratory during following lesson, or collected and examined leisure.

It would be useful to hear the experience teachers of elementary science in this matter.

From time to time it will be necessary to h an examination on the work, which may be pa written and partly practical. If the pract examination is conducted by the teacher hims it will afford a valuable means of testing progr

but I do not think it is of much value if carried out by an external examiner who has no previous experience of the boys' work.

However, an external examiner may get much help by the inspection of notebooks and by *viva voce* examination, a practice which is not possible if the number of boys to be examined is large.

It would be impossible for the examiners for the London Matriculation to make use of these aids, and I think that the authorities are well advised in not attempting the practical examination of the candidates.

It is, however, to be regretted that some means cannot be found to ensure that all candidates shall have gained a good practical acquaintance with the work, and perhaps, when a system of leaving certificates has been adopted, some satisfactory solution of the difficulty may be possible.

A school examination in which the classes are examined by an external examiner in collaboration with the teacher should greatly improve matters. Under these conditions the inspection of note-books and *viva-voce* examination of the boys will be possible, and a better estimate of their scientific education will be obtainable than is at present the case.

In the next number it is proposed to begin a course on the chemistry of some of the common phenomena of daily life, the material being chosen so as to allow most of the work to be carried out in the laboratory.

APPARATUS IN AMERICAN PHYSICAL LABORATORIES.

By E. S. A. ROBSON, M.Sc.
Principal of the Warrington Secondary and Technical School.

THE general arrangements of transatlantic laboratories do not differ materially from those in English schools, the chief point of difference being the elaborateness of the fittings. It is perhaps questionable whether this elaboration is not carried beyond the natural limit of efficiency, and a desire encouraged to produce something *bizarre*, or what Americans would term a "stunt."

In the secondary schools one misses the simple and ingenious home-made apparatus often seen in English laboratories, but for more advanced work the lavish way in which money is granted for the purpose of public education causes a feeling of envy on the part of the science teachers of this country.

In the American high schools the teaching of practical physics is compulsory, and candidates for university entrance examinations are required to produce their laboratory note-books signed by the teacher; it is therefore evident that a great incentive is given for the provision of suitable laboratory equipment. One can only wish that in the immediate future our own universities and Board of Education will realise the fact that by means of written examinations alone it is impossible to form an adequate idea of the knowledge of science possessed by pupils. The teaching of physics must surely have progressed sufficiently to demand some knowledge of practical work from all university matriculants and from candidates in the advanced examinations of the Board of Education. From the impression gained by the writer in a recent visit to the States, a fair amount of time in physics is spent in the study of mechanics. Experimental work includes the action of forces acting at a point; the problems of falling bodies; the determination of elastic constants; liquid pressures and the determination of densities.

By the courtesy of the various teachers the writer is enabled to give descriptions of some of the more elementary physical apparatus used in the schools and colleges in Boston, New York, Philadelphia, Baltimore, Washington and Chicago. The type of American high school would roughly correspond to the English city public schools, such as Merchant Taylors', St. Paul's, the Birmingham High School and the Manchester Grammar School, the ages of the pupils varying from 13 to 18 years.

Dealing first with mechanics apparatus, a simple device for the pressure of liquids consisted of a U-shaped manometer connected to a thistle funnel covered with thin sheet-rubber. The immersion of the latter at various depths in the liquid enabled quantitative results of the pressure to be determined.

For deflexion of beams a flat metal-bar resting on two triangular prism supports carried a weight suspended by a hook at the centre of the beam. The amount of bending was determined by a special form of overhanging micrometer screw, the contact closing an electric bell circuit.

In the New York schools flat-pan balances were used to a great extent for density determinations by Archimedes' principle. This necessitated a laboratory stool being moved to the bench and the balance swung over the edge, a clumsy and unsatisfactory method at the best, and considering the cheapness of beam balances, entirely unintelligible. Most science teachers are aware of the difficulty of shortening the length of a simple pendulum with ease, and without disturbing other adjustments. In one laboratory this difficulty was surmounted by using a sliding disc between the point of suspension and the weight. At the centre of the disc a small hole was drilled so as to allow the thread to pass through easily. A vertical metal-rod was firmly fixed to the wall with a clearance of about an inch, the suspension clamp and metal disc being moved to any required position. To measure the extension of a wire, a stiff horizontal pointer was fixed on a pivot situated one inch from the wire and about ten inches from a vertical scale on the wall. The end of the pointer was rigidly fixed to the wire, and the elongation was therefore measured in terms of the scale divisions.

In the elementary physics department of Yale University was a neat Boyle's Law apparatus for lecture use, which had a sliding-tape scale graduated up and down from a common zero. On adjusting

the scale zero to the level of the mercury in the volume tube the difference of level could be read off directly. It was probably more than a chance coincidence that in the lecture room a continuous piece of American cloth, wound on wooden rollers fifteen feet apart, served as a blackboard, a piece of wood three feet square acting as support for the writing surface.

As an example of the completeness of equipment of a modern American school, may be mentioned the Wadleigh Girls' High School in New York, which has no fewer than four physical laboratories. Arrangements are made for a supply of hot water at each bench by means of an automatic heater at one end of the laboratory. When the hot-water tap is turned on, a flow of water takes place through the heating coil and instantaneously a pilot lamp lights a large ring-burner underneath the coil; so that the supply at each bench is quickly obtained. In the electrical laboratory the current from the storage batteries is brought to plugs at the different benches.

FIG. 1.—Conical Pendulum. Reproduced from the *Pratt Institute* (Brooklyn) *Monthly*, April, 1902.

The writer noticed numerous experiments devised to show the motion of bodies falling down inclined planes. At the Pratt Polytechnic Institute of Brooklyn the exeriment was performed with a pulley running down an inclined stretched wire, the pulley being started from the top by an electric release. In another school the arrangement consisted of a curtain ring sliding down a smooth string. A third laboratory was fitted with a large wooden ball, about four inches in diameter, rolling down a smooth plane four yards long.

In the American technical institutes the practical work with mechanics comprised measurements on linear and circular dividing engines, also compound pendulum and loaded beam experiments.

In Fig. 1 is shown a neat form of conical pendulum made by a student at the Pratt Institute. Fig. 2 represents a simple form of level t elementary work.

The following experiment on sound, to il the phenomena of "beats," is probably kn most teachers. Two tuning-forks, with different vibration numbers, are taken, a of them has a piece of smoked glass fixed o prong. The other fork is provided with a and when both are vibrating simultaneo a horizontal plane, the tracing is obse moving,the stylus and fork longitudinally.

FIG. 2.—Form of Level Trier. (Messrs. C. L. Berger and So

In the study of light, the simple expe usually seen in English schools are conspic their absence, but in the American colleges t ject receives fairer treatment. Rowland g and Michelson interferometers are in gene and one of the sights of the Johns Hopkin versity of Baltimore is the room contain three machines ruling diffraction gratin 20,000, 15,000, and 14,438 lines respectivel inch. The writer interviewed Prof. R. W there, and received many suggestions for experiments. In one experiment to il

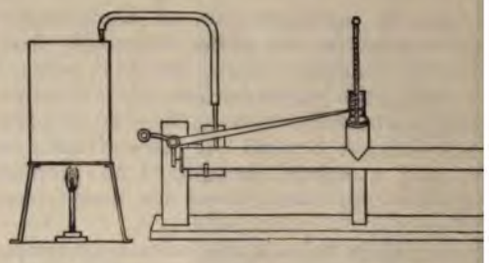

FIG. 3.—Apparatus to Measure Expansion of Metal Rod. from "A Manual of Experiments in Physics." By J. S W. J. A. Bliss. (Published by the American Book Comp

interference colours, a quantity of powdered was sealed in a flask along with a mi carbon bisulphide and benzol. On gently the flask, beautiful iridescent colours are ob owing to the high dispersive power and difference in the refractive indices.

Harvard University has an interesting made piece of apparatus, viz., an optical constructed from an old lathe bed, which s great possibilities to optical instrument At the Clark University, Worcester (Mass is also a fine collection of home-made ap

including astronomical telescopes, a heliostat, standard resistances, and inductances.

Turning next to the study of heat, the writer added another to an already large collection of extensometers in the apparatus (Fig. 3) used in several of the New York high schools. Curiously

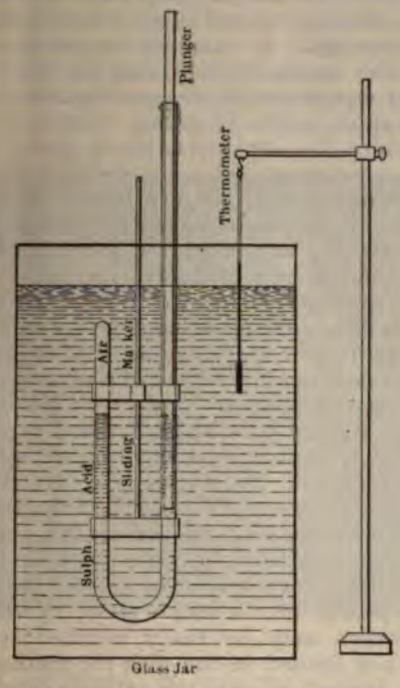

FIG. 4.—Apparatus for proving Charles' Law for Gases. (Reproduced from the *Pratt Institute Monthly*, April, 1902.)

enough, American teachers have not yet adopted the micrometer or spherometer in the measurement of expansion by heat. In Fig. 4 is represented a form of apparatus to illustrate Charles' law for gases at constant pressure, the sulphuric

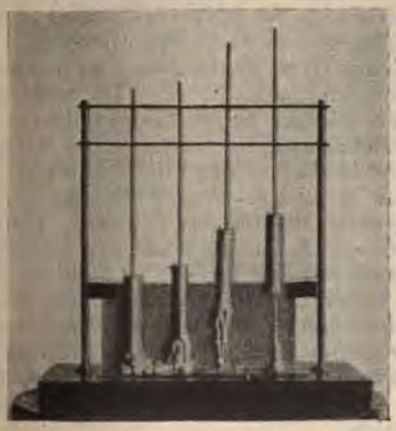

FIG. 5.—Apparatus to compare the Specific Heats of different Substances. (Société Genevoise, Geneva, Switzerland.)

acid in the two arms being kept at a constant level by means of a glass plunger. For lecture experiments on specific heat a modification of Tyndall's apparatus (Fig. 5) is sometimes used, the cake of wax being vertical, and the relative specific heats being determined by the depths to which the substances penetrate.

In the apparatus to illustrate the peculiar expansion of water the difficulty of filling the metal spiral was overcome by drilling the bottom end and inserting a metal screw which not only closed the tube after the liquid had entered but served as a means of adjusting the volume inside.

In electricity the American schools are rather poor on frictional work but much better on voltaic experiments. In some schools the slide wire bridge was arranged with the slider simply grooved to touch the metal rod and wire. Simultaneously, some of the resistance boxes were made with exposed coils fastened to a piece of hard wood. The reason given for this novel arrangement was the ease of repair, but in the writer's opinion this was more than counterbalanced by the increased liability to breakage.

FIG. 6.—Rowland D'Arsonval Galvanometer. Hall Pattern. (Leeds and Northrup Co., Philadelphia.)

For lecture purposes a gold leaf electroscope was observed in an enclosure of three mirrors, two being arranged at an angle of 120°, so that the leaves of the instrument were visible from all parts of the room. The enclosure was illuminated by an electric lamp through a glass window at the back. In reflecting galvanometer work the Rowland-D'Arsonval pattern is mostly in use. In the wall pattern represented in Fig. 6 the reading telescope and scale are arranged to tilt back when not in use. As an alternative to the switch-over commutator a plain wooden block is used with two brass strips fastened on parallel and with their ends dipping into four mercury cups in a second wooden block. The reversal of the current occurs when the upper block is turned through 90°. To map out a current sheet with an induction coil and telephone a flat glass dish is used containing a salt solution for the conduction of the current. A piece of squared paper placed under the dish serves to locate the equipotential lines obtained by moving the free wire connected to the telephone for the position of no sound.

Finally, with regard to labour-saving devices, the writer noticed in one laboratory type-written sheets of instruction placed on revolving pillars.

In another school the apparatus and sheets of instruction were placed together in a definite cupboard, the key being handed to the pupil, whose first duty was to check the list of apparatus and report any breakages to the teacher. In some of the technical schools and colleges the poorer students give out apparatus or attend to repairs in return for free tuition, the idea being to encourage the principle of self reliance.

English teachers who are interested in American methods will find materials for experiments in the following books:—

"Physical Laboratory Manual." Carhart and Chute. (Isbister.)

"Manual of Experimental Physics." Nichols, Smith and Turton. (Ginn.)

"Manual of Experiments in Physics." Ames and Bliss. (American Book Co.)

"Laboratory Manual of Physics and Applied Electricity." Nichols. (Macmillan.)

"Teaching of Chemistry and Physics in Secondary Schools." Smith and Hall. (Longmans.)

THE PREPARATION OF CRYSTALS.

By Albert E. Dunstan, B.Sc.
Assistant-master at Owens School, Islington.

Of the simple examples of chemical manipulation practised in school laboratories none is more interesting or more popular than the preparation of crystals; and there are few experiments in which care and neatness of working are more amply rewarded by results. In the course of practical chemistry in operation at Owens School, the preparation of crystalline specimens of common substances takes an important position.

In their first year boys become acquainted with the general methods of obtaining crystals. Later on they make a considerable number of specimens, illustrating the preparation of the chief salts of the metals, and laboratory space is always available for those who desire to grow crystals or carry on a slow crystallisation.

In no other way is it possible to get such an intimate and close acquaintance with the appearance and properties of a large number of common substances, while as a means of arousing and sustaining a thorough interest in chemical work it easily stands supreme. The comparative simplicity of the operations and the readiness with which the experiments can be repeated at home with the crudest appliances gives the preparation of crystals an advantage not possessed by the majority of experiments.

Exercises in crystallisation can be brought into the chemical curriculum almost from the beginning, but it is not advisable to do so till some preliminary observations have been made on solution and solubility.

Starting, then, with the idea of a solution of nitre, for example, saturated at a high temperature, the effect of cooling is readily seen to cause a certain amount to come out of solution.

This can be easily illustrated practically by boiling up nitre and water, and cooling the solution under the tap. It should also be deduced from a study of the solubility curve of nitre.

As to the manner in which the separated nitre comes out of solution, the influence of the conditions must be shown. Rapid cooling and small crystals, slow cooling and larger crystals, are effects easily observed. It is most important also to avoid a too strong solution, and the obtaining of the right concentration is most important. This concentration varies according to the conditions under which the crystallisation is going to take place.

In the ordinary laboratory lesson it is rather impracticable to put away twenty or thirty dishes to cool slowly, and moreover it minimises considerably the interest of the experiment.

There are various ways of testing if a solution will crystallise readily on cooling, so as to avoid the need of slow evaporation. A drop of the solution taken out on the end of a glass rod shows on cooling whether or not crystallisation will proceed. A very practicable method is to take a little of the solution in a small right-angled bent tube and cool it under the tap. If the drop crystallises, allow the dish to cool. If not, evaporate a little more, stop heating, and again try until the test portion is of the right concentration.

When this point is arrived at some of the solution may be poured into a watch glass, in which the crystallisation may be easily watched; or after crystals are formed in the dish the mother liquor may be drained off, and the crystals dried on the very convenient absorbent pads stocked by most dealers. Crystals should be made in this manner from nitre, blue vitriol, the alums, etc.

An exercise based on this may be found in the preparation of nitre crystals from gunpowder, after a preliminary boiling and filtering; mixtures such as sand and alum afford plenty of example of separation based on crystallisation, while the formation of salts by the neutralisation of acids by bases, again, give more scope for practice in the art.

Fractional crystallisation may be touched on at this stage of the pupils' work. The stock example of this is a mixture of potassium chlorate and potassium dichromate, the colour of the latter giving a sufficient indication when the chlorate is obtained in a state of purity. Ample illustrations of this will suggest themselves. These preliminary examples will illustrate what can be done with first and second-year boys in an ordinary practical lesson. Later on in the school course the crystal preparations gain a good deal by having more time for their completion, and crystal growing can be indulged in by boys who are willing to spend a few minutes a day for the necessary periodical examination.

Many precautions are necessary before good crystals can be obtained. Weaker solutions must be used, very slow evaporation and uniformity of conditions. A few selected specimens should be taken from a crop prepared in the usual way and placed in a dish, preferably flat-bottomed, with

er liquor. The dish should be kept
n as quiet a condition as possible—in a
ore-room, for instance. The growing
ld be turned on a fresh face every day.
better method than that in which the
l is suspended by a thread or hair. In
is almost impossible to obtain a quite
owth, owing to the presence of the
—on which, also, a small amount of
on frequently commences. With care,
ly enormous crystals may be grown
y ones obtained in the usual manner.

almost any volume of the *Journal of the Chemical Society*[1] will suggest plenty of material. Some of the simpler preparations are mentioned here as being of probable interest.

Chrom alum.—Make a strong solution of potassium dichromate in water, and to the cool solution slowly add the requisite amount of strong sulphuric acid. Reduce with alcohol or sulphur dioxide till the solution loses its red colour, taking care to keep the temperature as low as possible. Allow to stand in a cool place, and after crystallisation drain off the mother liquor from the crystal.

* Alum and Nitre.

* Copper Sulphate.

sulphate is an exceedingly good
vith which to practice growing. Taking
recautions about uniformity of tempera-
e of disturbance and periodical turning,
copper sulphate may be obtained about
ng the major axis. When a crystal
se dimensions, extra care is necessary
with it, and a much larger vessel must
contain it. The mother liquor, from
, must be filtered from the precipitated
ch always forms in this solution, and
pt up to the proper strength, a good
to hang near the surface a muslin bag
copper sulphate. Most of the ordinary
materials may be grown in this way.
nitre, and Rochelle salt suggest them-
od examples.

illustrations of crystals here given are
graphs, by Mr. P. C. C. Rust, of
in the Owens School Musuem. They
ances which have been prepared on the
ing scale, and having had almost un-
n and slow cooling; they have attained
e than is possible when working on a
scale.

EPARATION OF DOUBLE SALTS.

an extremely large field afforded here
cellent preparations, for the number of
double salts is enormous. A glance at

* Potassium Ferrocyanide.

Increase of temperature during the operation causes a chrom-sulphuric acid complex to form.

Potash alum.—Mix equivalent quantities of potassium sulphate and aluminium sulphate. Dis-

ions are from Clough and Dunstan's "Elementary Experi-
(Methuen.)

[1] Especially in the Inorganic Abstracts, also *vide* Lengfeld's "Inorganic Preparations." (Macmillan.)

solve in boiling water, filter and concentrate till crystals form on cooling. Recrystallise and grow selected specimens.

Ferrous ammonium sulphate.—Weigh out equivalent amounts of the constituents. Dissolve the ferrous sulphate in air-free water which has been slightly acidified by sulphuric acid. Add the concentrated solution of ammonium sulphate which has been made up in the same solvent. Allow to cool, wash the crystals with air-free water and dry rapidly between folds of filter paper.

Sodium fluor-arsenate.—$Na_3AsO_4 . NaF . 12H_2O$. Dissolve ordinary sodium arsenate in water. Add caustic soda in sufficient amount to cause the formation of $Na_3 AsO_4$. Add a solution containing the equivalent amount of sodium fluoride, filter and allow to crystallise.

Sodium fluor-phosphate is prepared in a precisely analogous fashion. Both are octahedral.

Rochelle salt.—Neutralise a boiling solution of sodium carbonate with potassium hydrogen tartrate. On cooling it crystallises in large rhombic prisms.

Potassium chrom-oxalate.—Ten grs. potassium dichromate, 20 grs. potassium hydrogen tartrate and 20 grs. oxalic acid, are dissolved in boiling water. On cooling intensely black-blue crystals are obtained.

Miscellaneous Examples in Crystallisation.

Pure *sodium chloride* may be obtained by passing washed HCl gas into a cold saturated filtered solution of common salt.

Pure *copper sulphate* is made from the commercial substance by oxidising the ferrous sulphate with a drop or two of conc. nitric acid, boiling, evaporating and crystallising.

Lead nitrate is made from red lead by the action of dilute nitric acid and *lead iodide* and *chloride* from the nitrate.

Potassium chlorate.—Pass chlorine through a boiling solution of potassium carbonate till all effervescence of CO_2 ceases and no more chlorine is absorbed. The pinkish solution is boiled for a few minutes, filtered hot and allowed to cool. The crop is recrystallised several times till it no longer gives a test with silver nitrate.

Boric acid may be obtained from borax and hydrochloric acid.

Chromium trioxide from potassium dichromate and the calculated amount of strong sulphuric acid. Add the acid to the cool solution. After crystallisation filter through asbestos and wash with strong nitric acid. Dry on a porous tile in the steam oven.

Manganese chloride from the chlorine flasks, *potassium hydrogen sulphate* from nitric acid residues, *ammonium nitrate* by neutralisation of ice-cooled nitric acid, also suggest themselves as good examples.

Mixed and Layer Crystals.

These form good exercises in growing and preparing crystals. It is a useful experiment in connection with the law of isomorphism to prepare mixed crystals of potash and chrome alums, using various preparations of the constituents and getting different shades of purple.

Good layer crystals can be obtained by growing chrome alum in potash alum solution. The exact equivalence of form and the sharp distinction of colour are well marked. The usual precautions as to concentration, &c., must be very carefully observed, otherwise mixed crystals may be inadvertently obtained.

Lantern Projection of Crystals.

For this purpose a lantern having a horizontal stage is essential. Place on this a thoroughly well cleaned glass plate, and on this plate drop a little cold saturated solution of the salt. In a short time crystallisation will begin, and the growth of the crystals can be followed on the screen. If a hot and strong solution were used, crystallisation would proceed too rapidly—the heat from the lantern usually causes enough concentration for this purpose. Most of the ordinary inorganic salts show well in this way, nitre, copper sulphate, alum, salammoniac, &c.; but more rapid and beautiful results may be got by using organic substances in an appropriate solvent. Thus solutions of picric acid in benzene, nitrobenzene in the same substance, acetanilide in alcohol, give good effects, while if a little phenol be melted and dropped on to the plate it will readily crystallise, as it cools in a most interesting fashion, and then, as the plate heats up in the lantern, the crystals slowly disappear. (*Vide* Newth's "Chemical Lecture Experiments," Longmans).

With good illumination and proper shading good bromide prints can be obtained, focusing carefully on the screen first of all, and then substituting the paper, giving an exposure depending on the speed of the emulsion and the light used.

On a much smaller scale microphotographs are readily obtained. A drop of the solution is allowed to crystallise on the slip. The eyepiece of the microscope is substituted for the lens of the camera, and the image formed on the ground glass in the usual way. Limelight forms the best illuminant.

Althongh systematic crystallography has not been touched on in this article, it will be found indispensable if work on crystallisation is taken up, even on such elementary lines as are necessarily indicated here. As a very excellent introduction the author would recommend Woodward's "Crystallography for Beginners," with its capital set of crystal nets, for the illustration of the simpler forms of crystals.

Important changes are announced in the programme of the Society of Arts Examinations. The subjects remain the same but in place of two grades, elementary and general, there will be three divisions or stages:—(1) Elementary—corresponding to the former Grade I.; (2) intermediate—corresponding to the third class and lower part of the second-class of the former Grade II. (3) advanced—corresponding to the first-class with the upper part of the second-class of the former Grade II. In the advanced and intermediate stages first and second-class certificates will be granted in each subject. In the elementary stage certificates will be given in each of the subjects enumerated. These will be of one class only.

'PEDAGOGICS" AT THE INTERNATIONAL MATHEMATICAL CONGRESS.

By G. H. BRYAN, Sc.D., F.R.S.
Professor of Mathematics in the University College of North Wales.

[T is to be regretted that out of a total membership of about 330 at the recent Mathematical Congress at Heidelberg (August 8th to 13th) reat Britain was only represented by seven embers. It is true that in this country the verage mathematical teacher has few opporunities for interesting himself in mathematical reearches. But a large proportion of the discussions n this occasion were taken up with the teaching f mathematics, and not only was one of the ctions devoted to pedagogics, but many of the apers in other sections contained an underurrent of reference to the changes which have een taking place in the aspect of mathematical ought in different countries in connection with e problem of mathematical teaching.

The general impression produced on the present riter by what he saw and heard at the Congress as that the movement in Great Britain, the chief sult of which up till now has been the subitution of geometry for Euclid, only represents a ry small element of a widespread tendency of cent times to devote greater attention to the prac-al and experimental side of mathematics, and to force a less prohibitive standard in the matter of ductive methods and the solution of abstruse oblems. When mathematics was not such a rge subject as it now is, there was no difficulty in lopting, in many branches, a method of treatent which was at the time believed to be logical. ut closer examination of the foundations of any anch of mathematics often shows that what ere formerly regarded as sound deductions really sted on a quicksand of assumptions, and that hile mathematicians may go deeper and deeper seeking for solid rock on which to build their bric of theory, it is, in most cases, impossible do so without reference sooner or later to perience. The next step in the natural order evolution is to introduce experience at an rlier stage in the treatment. A good illustration this point was brought out in a discussion on a per by Prof. Study on "The Principle of Conrvation of Number," in which a *reductio ad absurdum* as derived from the theory of quadric surfaces, it ing deduced by the author that two was equal to ur. In the course of the discussion it was marked that it was often more useful to teach udents to apply a theorem to the solution of oblems, even if that theorem were known not to universally true, than to spend time in examining hen the theorem was true.

Prof. Gino Loria's paper on "The Teaching Geometry in Italy in Middle Schools" (*écoles oyennes*) was replete with points of suggestive terest. An attempt had been made to abolish uclid in Italy, but the text-books brought out meet the new conditions were so bad that it as found necessary to go back to Euclid. This reversion was made largely at the instigation of the late Prof. Cremona. The text-books were gradually improved, and the Government (how very un-English this sounds) organised a competition for the best book on geometry. The successful competitors were six in number, including D'Ovidio, Paolis, Veronese, and one other in the first instance, and, later, Enriques and Amaldi. The final result was the adoption of a course in which plane geometry and geometry of space were taken to a certain extent in conjunction. The Italian society *Mathesis* played an important part in the movement.

"Mathematical Teaching in Bulgaria" formed the subject of a communication by Prof. Anton von Sourek, of Sofia. Twenty-five years ago the mathematical instruction given in Bulgarian schools was practically *nil*; at the present time a standard has been reached which compares favourably with that of neighbouring continental states.

Prof. Gutzmer, of Jena, made a number of interesting remarks relating to the teaching of mathematics in Germany. Owing largely to the efforts of Profs. Klein, von Brill, and Weber, a great change has taken place in recent years, far greater attention being now given to practical applications. Of the three moving spirits above mentioned, Prof. Klein, in a short address to the applied mathematics section, gave an amusing insight into the difficulties which had to be combated in introducing the new movement. In France the Calculus was taught in schools. In Germany, Prof. Klein found that the Calculus was excluded, but that ingenious subterfuges were employed instead, reminding us of the old Cambridge "three-day" methods. Thus the notation dy/dx was not permitted. When rates of change were required the candidates were taught the formula

$$\left(\frac{f(x+h)-f(x)}{h}\right)_{h=0} = f'(x)$$

under the title of *Schellbach's rule*, and when maxima and minima were required the property that $f''(x)$ must be negative or positive was given out to them under the title of *Fermat's rule*.[1] Before entering the universities candidates spent about fourteen days over learning the Calculus, treated in fourteen pages, and found that the ideas were just the same as they had learnt at school, only under another name. Prof. Klein's own experience was interesting. His attempts to *simplify* the teaching by admitting the notation of the Calculus met with a somewhat cold reception from the authorities, who, as is too frequently the case, thought the professor was only wanting to make the subject harder and more abstruse, and did not realise that it was they that were making the difficulties which the experienced mathematician wished to remove.

[1] The present writer has a lively recollection of some series that had been set in the first three days of the tripos, just before he was a candidate for that examination. These series were immediately deducible from the factorial expressions for the sine and cosine of an angle by logarithmic differentiation; only as they occurred in a three-day paper, the candidate (who was not supposed to use the Calculus) had to substitute $x+h$ for x and proceed to the limit.

This experience is characteristic of the difficulties against which many mathematicians have had to contend elsewhere. If they try to simplify mathematical teaching an outcry is raised by those who know nothing about mathematics, and who insist on retaining antiquated and cumbersome methods on the ground that the easier alternatives may be all very well for a professor, but are too hard for a beginner.

We must not omit to mention Prof. Greenhill's paper on the theory of the top. An amusing episode consisted in the fact that the lecturer had difficulty in arranging the necessary experiments in the aula of the university, the use of apparatus in illustrating a mathematical discourse being evidently a thing quite unknown. The most interesting point shown by the experiments was that results which could only be interpreted analytically by means of elliptic functions could be made clear to a beginner by means of demonstrations only requiring a couple of bicycle wheels.

The exhibition of models, text-books, and apparatus was a most interesting feature. The following items may be mentioned:—Movable models of minimal surfaces designed by Prof. S. Finsterwalder, exhibited by W. Sedlbauer, of Munich; models on the partition of the sphere, also by Prof. Finsterwalder; geometrical models designed by Prof. Hermann Wiener and exhibited by the Darmstadt Technical College; the campylograph of Father M. Dechevrens, Leibnitz's calculating machine (shown by Prof. Runge), and experiments on fluid motion with *thick* films of liquid of *small* viscosity shown by Prof. Prandtl.

The use of the lantern in mathematical teaching formed the subject of a paper by Prof. Schilling. The illustrations included suspension bridges, towers, Fourier curves, and, in short, nearly everything that could be thrown on the screen. A novel method of demonstration for large classes was shown by Prof. Wiener. He constructs wire models, giving the outlines of surfaces or figures, and then holds them in such a way as to throw a shadow-picture on a screen. By moving the model about the appearance of solidity is readily shown. A resolution was passed by the Congress urging the German Government to provide lanterns and other apparatus for use in the teaching of mathematics in schools. In the matter of text-books, Messrs. Teubner, of Leipzig, and Gauthier Villars, of Paris, were the principal exhibitors.

A word must be said as to the local arrangements and social functions connected with the Congress. It was evident on all sides that the organising committee had spent a great amount of attention in making the meeting a success, and the entertainments, which included a dinner, a garden party at Schwetzingen, a river excursion, an illumination of the castle, and a *kneipe*, added greatly to the enjoyment of the congress. When meetings of this kind are held in England, a hospitality committee generally arranges for a small proportion of the members to be put up privately. Such a plan would, of course, be incompatible with continental social conditions, and it was the unanimous opinion of the English representatives that the German arrangements left nothing to be desired, but that the English system of private hospitality would have been detrimental to the success of the meeting. The next congress will be held in Rome, four years hence, and the next after that in England.

From the great attention that is being devoted on every side to practical applications, there appear hopeful signs that we may be on the eve of a renaissance period in the history of mathematics, and that the subject, instead of being regarded as too abstruse for the mind of ordinary mortals, will in the course of time be acknowledged to be the most useful and popular of all sciences. We may yet live to see the time when the "consulting mathematician" will be called on to give professional advice on matters mathematical in the same way that lawyers are now employed in matters legal. That commerce and trade would benefit enormously by such an arrangement is a fact which at the present time few people can be induced to believe. It is nevertheless true.

In connection with the present article the following papers may be consulted:—

F. Klein.—Ueber eine zeitgemässe Umgestaltung des mathematischen Unterrichts an den höheren Schulen. (Leipzig: B. G. Teubner, 1904.)

Jahresbericht der deutschen Mathematiker-Vereinigung, xiii., 6 (July 19th, 1904), containing papers by Paul Stäckel, F. Klein, A. Pringsheim, &c. (Teubner.)

Geschichte der deutschen Mathematiker-Vereinigung. Von A. Gutzmer, Jena. (Teubner.)

Exercises in Practical Mathematics. By A. G. Greenhill.

NEW PHYSICAL AND CHEMICAL APPARATUS.

By G. H. WYATT, B.Sc., A.R.C.Sc.

Emanuel School, Wandsworth Common.

THE following selections from the catalogues of the various firms mentioned have been made in view of the special needs of science masters in secondary schools.

I.—PHYSICS.

Messrs. Baird and Tatlock[1] have brought out a new form of Leclanché cell, which they call the "Carporous." Fig. 1 shows the construction. The zinc pole is at the centre, and is surrounded by a composite cylinder, porous earthenware inside and carbon outside, the intervening space being filled with the depolarising manganese mixture. Diminished resistance and an absence of "creeping" are important advantages claimed for the cell, but complete depolarisation in work is also said to proceed. The latter quality should make this cell of great value, bearing in mind the simplicity of the Leclanché cell in the matters of charging liquid and absence of fuming.

[1] Baird and Tatlock, 14, Cross Street, Hatton Garden, E.C.

In Messrs. Becker and Co.'s[1] lists attention may be directed to the protected agate fittings of balances, an important item in school apparatus. The balance shown in Fig. 2 (No. 3009) is likely to be in considerable demand, offering protection of this kind at the price of £2 4s. for the 100 g. size, the glazed case being included. For schools prepared to expend somewhat more freely, the balance known as the "George Green," at £3 17s. 6d., is very suitable. It is strong, sensitive to half a milligram, and is provided with a glass-fitted case and levelling screws. The "Harrow" balance at £12 will interest some with its new rider apparatus, designed to obviate the falling of the rider when used or replaced. Cheap lens-holders and other items for elementary optical work are catalogued. A new pattern Differential Thermometer, in which the vertical height of the bulbs can be varied, attracts attention with its possibilities. For laboratories in schools

FIG. 1.

lighted by electricity attention is drawn to the switchboards and "Series" system of wiring, in which cost is reduced by using the lighting fittings for the purpose of experimental work on the part of the student. Messrs. Becker issue an illustrated pamphlet giving full details of this system.

We are glad to see that Messrs. J. J. Griffin and Sons,[1] besides many other novelties, now supply slide rules at such a price that it is possible to provide an upper form with a number of them without any great expenditure. The cheapest form consists of a graduated oblong card and a transparent celluloid film. The scale is in ten parts, printed both on the card and on the film, and though measuring but 6 by 4 inches, yet gives results equalling those obtained by using a four-foot scale. The processes which can be carried out by this slide rule include multiplication, division, proportion, squaring, cubing, and the extraction of cube and square roots. The price is 3s. The ordinary form of slide rule in boxwood, 10 in. long and containing the usual logarithmic scales, may be had for 4s. In Messrs. Griffin's new Electrical Catalogue we find many attractive

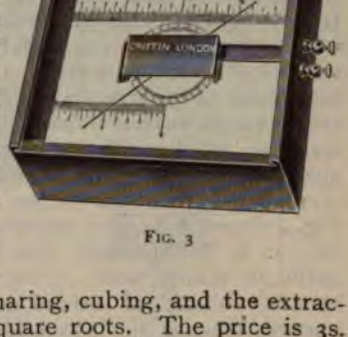

FIG. 3

FIG. 2.

FIG. 4.

pieces of apparatus. Munby's Tangent Galvanometer (p.—3740, 12s.), Fig. 3, is of simple con-

[1] F. E. Becker and Co. (W. and J. George, Successors), Hatton Wall, E.C.

[1] J. J. Griffin and Sons, Limited, Sardinia Street, Lincoln's Inn Fields, W.C.

struction, eminently suitable for school work, one striking feature being the manner in which the tangent scale is clearly shown along with the circular graduations. A series of Voltmeters and Ammeters (p. 3—3792), measuring 0-6 or 0-12 volts, and 0-6 or 0-8 amps., should be found very useful. Either instrument costs 12s. 6d. The Nernst lamp, adapted for lantern work (3—4538), if of the large type, costs 19s., while the small type, suitable for enlarging or small class-room work, may be had for 10s. A most useful collection of tables is printed at the end of the catalogue.

Messrs. Philip Harris and Co.[1] have introduced an apparatus designed by Mr. J. Comerton, which can be used either as an Extensometer or Indicator of Relative Diffusivities. It consists of a tube of any particular metal through which cold water, hot water, and steam are passed. The displacement of the free end is measured by a lever arrangement. To compare diffusivities, pellets of wax are fixed on the tube at known distances apart, and the times of melting are plotted. This is repeated with the tubes of various metals. Fig. 4 shows a form of ammeter (12s.), designed by Mr. J. A. McMichael, which should be found useful in school work. The current is measured by the volume of mixed gases produced per minute, whence the name Minute Ammeter, and the instrument reads to 3 amps. in tenths. The connections being made, the time is measured from the instant at which the acidulated water, pressed upwards by the liberated gases, reaches the zero of the graduated tube. As pointed out by the designer, the instrument may be used as an ammeter in any experiment where increase of resistance is no drawback. For more elementary classes the Mensuration Models in sets, designed by Mr. S. Irwin Crookes, will be of great value. They are of two kinds. The first are solid and are constructed to show the production of a square, hexagonal, or pentagonal prism from triangular prisms, and the consequent deduction that volume is jointly proportional to the area of end and the length or height. The second kind are hollow, and are so arranged that prisms and pyramids upon equal bases and of equal heights may readily be shown to possess volumes in the proportion of three to one. The relations between a sphere, a cylinder, and cone of similar dimensions, are illustrated with hollow models. The terms *right* and *oblique*, and their application in the equality of volumes, are shown by hollow prisms and pyramids of equal altitude.

Messrs. Frederick Jackson and Co,[2] catalogue Spring Balances to carry 50 or 100 grams, as well as those adapted for heavier weights. It is not always easy to find these small metric balances when wanted. Pullinger's Expansion Apparatus (2473), is said to give results within 0·5%, and each experiment may be performed in twenty minutes. The instrument consists of a metal tube, through which steam is passed, supported vertically in a wooden frame. The expansion is measured by a spherometer standing on a glass plate supported on the top of the frame. The point of the spherometer, passing through a hole drilled in the plate, touches the upper closed end of the metal tube. The temperature of the tube is obtained by the thermometer placed in a side opening. The price of the apparatus complete is £1 2s. 6d., and extra tubes of various metals may be obtained at a cost of 5s. each. Other methods of measuring expansion are in use: it should be a valuable piece of training for a student to use them in turn and then to draw his own conclusions as to their relative accuracy. A useful addition to a Boyle's Law Apparatus of the kind generally employed to-day, is a Jolly bulb. This allows the rate of rise of pressure of air at constant volume to be obtained readily. A convenient arrangement for this purpose is catalogued, the complete apparatus costing 17s. 6d.

Notwithstanding the great increase of individual practical work for classes, some experimental work on the part of the teacher is still required for the more advanced pupils who are always very interested in the newer results and arrangements of apparatus. For this reason readers will be glad to have their attention drawn to Messrs. Newton & Co.'s[1] lists. Prof. R. W. Wood's Cyanine Prisms (10s.) showing anomalous dispersion can be used with any spectrometer. Small size Diffraction Gratings ruled on glass with 2,000 lines to the inch (2s. 6d.) will be welcomed. Nothing could be more convincing to students beginning the study of the undulatory theory than some practical work with Zone Plates (10s. –). These are glass plates on which concentric rings, alternately transparent and opaque, arranged with their radii proportional to the square roots of the natural numbers, produce the effects of convex lenses. If the alternate opaque rings are replaced by a thin layer of gelatine, the waves from these rings are thrown out of phase with those from the adjoining rings to the extent of half a wave length. Such plates are known as Phase-reversal Zone Plates (10s.), and are used as lenses for telescopic or photographic purposes—a most interesting result of Prof. Wood's experimental work. Messrs. Newton make a small apparatus called the "Boyla Tube" (2s. 6d. or 3s. 6d.), with which the various "critical" effects in a liquid may be readily shown either to a group of students, or upon the screen.

From Messrs. W. G. Pye & Co.[2] comes a useful substitute for a sextant which they name the "Anglemeter" (12s. 6d.). A metal arc 4 inches radius is graduated in degrees, over which slides a pinhole sight. The fixed mirror is perpendicular to the arc, and passes through the zero division. The axis of the arc is indicated by a scratch on the mirror. The anglemeter is very simple, and even where sextants are in use could with advantage be employed for preliminary training in the use of

[1] Philip Harris and Co., Ltd., Edmund Street, Birmingham.
[2] Frederick Jackson and Co., 14, Cross Street, Manchester.

[1] Newton & Co., 3, Fleet Street, E.C.
[2] W. G. Pye & Co., "Granta Works," Mill Lane, Cambridge.

plicated and delicate instruments. A etic Balance is shown in Fig. 5, in nagnets, one fixed and the other its middle point, are placed alongside The tendency of one magnet to be m its horizontal position is counter- mall weight sliding along its length. of the poles of the magnets under having been determined, they are ally one over the other, and the position of the sliding weight obtained. lance Mr. Hibbert, the inventor and ows how (1) to compare two magnetic measure the intensity of a magnetic ompare current strengths, (4) to test aw, and (5) to obtain the absolute s in c. g. s. units.

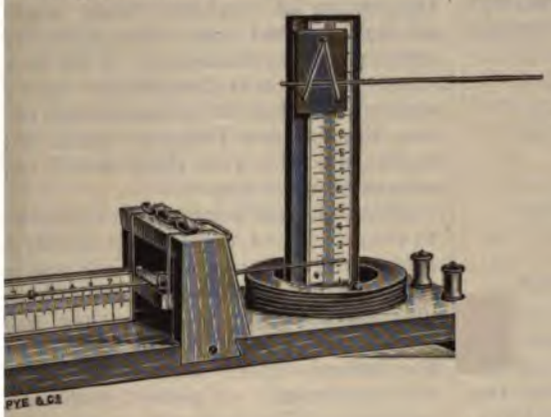

Fig. 5.

II.—Chemistry.

Brewster, Smith & Co.[1] have intro- ndy piece of apparatus in the Midget 6d.), Fig. 6. It consists of a Bunsen a sliding cover to the air hole, the ich in controlling the admission of air variation in the flame from the silent that in which "roaring" takes place. port for crucibles, and a conical hood, e arrangement. The temperature is sufficient to melt thick copper-wire nute, and a crucible rapidly attains a lour at all points. Ramsay furnaces, odification, for heating combustion ordinary burners, are supplied by wster, Smith & Co. with either fixed arms: the latter should be useful, as ighting burner for the lecture table. raduated in c. c. and in English fluid amps which can be attached to the nches or shelves, and a new form of for burettes or flasks, are among the this firm's catalogue.

l gas-jars with ground flange can be essrs. A. Gallenkamp & Co.[2]. These are preferable to the older form of gas tubes, for they require no clamping, and more readily allow examination of the gas collected. Laboratory Mats for hot flasks, etc., are priced so cheaply (3s. per hundred) that many, to whom the cost of cork mats was a hindrance, will be glad to have their attention drawn to the newer form. The same firm announce a Standard Barometer, on Fortin's principle, at the low cost of £3 7s. 6d. The diameter of the mercury column is 0·25 in., and a double vernier reads to 0·01 in. or 0·1 mm.

A useful Glass-tube Cutter, shown in Fig. 7, is introduced by Messrs. Griffin & Sons. The tube being placed in the V-shaped arms, the cutting wheel is lowered till it just touches the glass, which is then rotated. Any size tube may be cut, and the wheel, if worn, may be replaced by

Fig. 6.

another at a small cost. Prof. Sydney Young's improved Still Heads are supplied at a low price (1s. 6d.), and will furnish the means of making a valuable experimental exercise to a student in a higher form. The results obtained are so exact that the student can more clearly grasp the meaning of fractional distillation than is possible with

Fig. 7.

apparatus giving vaguer results. The firm announce a new form of clamp, which is capable of supporting apparatus of a large range of dimensions, one-third of an inch up to three inches or more.

Messrs. Philip Harris & Co. are supplying a

[1] ith & Co., 6, Cross Street, Finsbury Pavement, E.C.
[2] p & Co., Ltd., 19-21, Sun Street, Finsbury Square, E.C.

new form of deflagrating spoon, free from cork where the stem passes through the brass disc, and fitted with a movable bowl. Hoffman's Clip is a new form capable of considerable extension, and appears to be especially suitable for supporting V-tubes, since the pressure can be made almost negligible. The estimation of carbonic acid in carbonates has given rise to many contrivances in the arrangement of the flask and necessary tubes. A further novelty is exhibited in Whiteley's flask, in which the lower half is divided into two equal parts, one to contain the acid and the other the carbonate. The same flask could be used for metal and acid in displacement experiments when measuring the volume of gas liberated; the acid and metal being kept apart until the stopper is replaced in the neck of the flask, and the clip on the rubber tube opened. In the case of reactions proceeding with great rapidity, the advantage is obvious.

PLUTARCH ON EDUCATION.

By William Murison, M.A.
Senior English Master, Aberdeen Grammar School.

PLUTARCH of Chaeroneia in Boeotia, who lived from about 50 to about 120 A.D., was highly popular with men of letters in the sixteenth century. Not to multiply instances, Scaliger called him *totius sapientiae ocellus;* Shakespeare used the "Lives" as a source-book for several plays; and Lyly incorporated in his "Euphues" an English translation of the "Essay on Education" which we are now to consider. "Essay" seems the most suitable term, since the work is neither systematic nor exhaustive, and is more literary than scientific in method. Still it gives us an interesting glimpse of the great moralist's mind when directed to the problem of the formation of character; and, as Prof. Woodward has pointed out, it strongly influenced the educational views of Erasmus and other Humanists.

In the opening sentence the theme is stated: "How are free-born children to be trained to become good and worthy citizens?" This lofty aim finds an echo in Milton's description of "a complete and generous education" as "that which fits a man to perform justly, skilfully and magnanimously all the offices both private and public of peace and war."

Plutarch first deals with the choice of a wife, a topic, however, which does not nowadays fall within the scope of education. He holds it essential for the child to have good parents, since perfection of character is attainable only through a happy conjunction of natural abilities, rational instruction and regular practice. By various illustrations we are shown how these three must co-exist if perfect virtue is to be reached.

Nursing is next discussed, but here again much of what is said does not concern us as schoolmasters. We may mention Plutarch's injunction that fostermother and nurse should be chosen judiciously, since the infant's tender mind easily receives and retains impressions. The foster-mother's children, too, should be of good character and should speak pure Greek and speak distinctly. The danger of bad associations is great, for, as the proverb says, "Live alongside a cripple and you will learn to limp."

When of suitable age, the boy must be provided with a "paedagogus," and Plutarch ridicules the usual method of selection. The ablest slaves are made farmers, traders or stewards, while the drunken and the gluttonous, fit for no occupation, are considered worthy to be entrusted with the care of young boys. Even more important is the choice of teachers. They ought to be men of unblemished life, unimpeachable character and first-rate scholarship. This is a point which surely does not at the present time require to be emphasised, but it is interesting to note that a the Renaissance Erasmus insisted on a similar standard: otherwise there could be, he felt, no reform of education.

Plutarch next pours scorn on those fathers who, to oblige a friend, employ this or that schoolmaster, however ignorant or worthless; and on those who, while accumulating wealth, grumble at the expense of good schools and allow their sons to remain uneducated. When these turn to vice or crime, the fathers repent their folly and learn too late that the source of perfect manhood is a proper education. This leads to a panegyric on education as the beginning, the middle, and the end of the way to virtue and happiness. All other "good things" are mean and not worth pursuing. High birth comes from one's ancestors; wealth is the gift of fortune and may quickly vanish; fame is unstable; beauty, health and strength are fleeting and frail. Education alone is immortal and divine. Intellect and reason form the highest part of man's nature, the part which fortune, calumny, sickness, leave unimpaired; which becomes young by growing old; and to which time, the thief of all else, adds rich experience. With this eulogy of education as the origin of virtue we may not altogether agree, but we should never let ourselves or others lose sight of the fact that complete, or even partial, lack of education is a serious barrier to material, mental and moral progress.

The training necessary to accomplish Plutarch's aim must be pure and sound, far removed from silly make-believe; for to please the many is to displease the wise. As an example of foolish method, Plutarch gibbets the demanding of extempore harangues from mere lads. The injudicious selection of subjects for school essays may supply the modern analogue, which, like the extempore harangue, induces the spinning of empty verbiage, because, forsooth, so much space must be covered. It is, in Milton's words, "a preposterous exaction, forcing the empty wits of children to compose themes, verses and orations, which are the acts of ripest judgment and the final work of a head

long reading and observing, with elegant and copious invention."

orn children, then, should pass through the school curriculum. The kind of instruct specified, but Plutarch evidently means al in the day schools of Greece—boarding were of course unknown—viz., reading, a knowledge of the chief poets, music and tics. Note the omission of natural sciences gn languages. Plutarch does not attempt an ideal scheme: he is content with the n use. He is persuaded that after all it is nachinery that is the vital part in educat the ability and the character of the

is impossible to be perfect in everything, ould learn the ordinary branches cursorily, ote their best efforts to moral philosophy, reign study. Philosophy, says Plutarch, ly remedy for the weaknesses and suffer- the soul. Philosophy shows us what is , just, desirable, and what is not. Philo- veals to us our duty to gods, parents, laws, strangers, rulers, friends, wives, and slaves. Philosophy teaches us how prosperity or adversity, how to act in any ance of life.

preciate the unique position assigned to hy by the moralist we must remember is time ethics had to a large extent taken e of religion. To-day we go to the other and neglect philosophy, mental and moral, ject for general study. This neglect en- seems to me, a loss which neither language ematics nor science can make good.

is no mere studious recluse that Plutarch ortray. His ideal comprehends politics as philosophy, his practice did the same; ook his share in the municipal duties of ve city. The perfect man, combining the e statesman spent in his country's service life of the philosopher spent in calm con- on, Plutarch finds in Pericles of Athens, s of Tarentum, Epaminondas of Thebes. ody, however, must not be neglected. gly the boy should be sent to the gym- where he will acquire not strength alone grace of movement. Gymnastics must be overdone nor allowed to hinder other education. As an important element in training Plutarch recommends military velin throwing, archery and hunting. ery modern his words sound when he it to be a matter of supreme concern in war for a country to possess citizens l with sturdy physique and trained to

is point someone is supposed to interject, ow can people of moderate means pay for 'ou are thinking only of the rich." Plu- plies that he wishes all to share in this n, but if poverty prevents anyone, let not Plutarch be blamed. Nowadays with ents and State aid we have another way ing the difficulty.

Like Quintilian, Plutarch abhors corporal punishment. Employ exhortation and reasoning, he says, not blows. Flogging befits the slave, not the freeborn, and makes the pupil hate his tasks. Far more effective is a mixture of praise and blame.

Some fathers foolishly overload their children with studies and allow them no relaxation. Here, as elsewhere, there should be moderation; and nature's universal law of alternate labour and rest should be observed. A father is well advised not to content himself with handing over his son to "paedagogus" and teacher, but to see that they do their duty. The value of oversight is shown by the proverb, "Nothing fattens the horse so much as the king's eye."

Plutarch, like his contemporaries, gives greater prominence to memory than we do. He calls it the storehouse of education, and recommends that it should be diligently exercised in youth to increase the power of one naturally strong and to strengthen one naturally weak. He reminds fathers how useful memory is in the business of life. The remembrance of the past should be a lesson for the future.

Boys ought to be kept from foul language; for, as Democritus says, "the word is the shadow of the deed." They must learn to be affable and courteous, to bridle temper and tongue, to restrain their hands. Above all, they should be taught to speak the truth. It is necessary also to keep boys from the company of wicked men, especially flatterers. For some of their wickedness will adhere to the boys, and flatterers are the worst corrupters of youth.

Nor is it in boyhood only that a father should watch over his son. Plutarch wisely calls attention to the critical time of incipient manhood. A child's faults are comparatively small and are easily remedied. A stripling will sometimes break into vice and even crime. Thoughtful fathers will therefore exercise double care; by instruction and advice, by threats and entreaties, by making promises and showing examples, they will lead their sons to ways of temperance and discretion.

Fathers, however, should not be too harsh: let them remember that they were once young themselves. Some faults of youth are to be pardoned, others ignored; and in punishment mercy should season justice. Plutarch recommends marriage as a steadying influence on a young man, but here he goes beyond our restricted notions of education. Above all, it is of supreme importance that fathers set their sons a good example to turn them from base deeds and shameful words.

In conclusion, Plutarch recognises that his scheme may fail owing to the conditions of human existence and the frailty of man's nature. Perhaps, he says, to compass all this is the dream of a visionary: even to carry out part of it requires good fortune and great care: but accomplishment, he is confident, does lie within the power of mankind.

It will be observed that the essay deals exclusively with boys. Yet Plutarch must not be

classed among the opponents of the higher education of women. He did not, indeed, sketch a scheme for them, but in another essay, entitled "Marriage Precepts," a wedding present to Pollianos and Eurydice, we get a hint of his views on this point. Remembering the importance he attaches to the earliest stage of a child's life, we need not be surprised that he advocates similarity of studies for men and women. Eurydice should share in her husband's study of philosophy. She has the right to say to him, "Thou art my guide, philosopher and teacher in the noblest and divinest things." A woman who knows geometry will be ashamed to dance. A woman who has fallen under the spell of Plato and Xenophon will turn a deaf ear to the charms of Thessalian witches and laugh at their promises to fetch the moon from the sky. If women are left without education, their minds will generate many monstrous devices and passions. Plutarch tells Eurydice that not for her are the pearls and the silks of the rich : she is to seek the ornaments of a Theano or a Cornelia. Thus her life will be full of honour and happiness. For she will share, not perhaps in the roses of Pieria, but certainly in the fruits which the Muses bestow on the lovers of education and philosophy.

Complete justice cannot be done to Plutarch in a summary account such as this; but enough, I hope, has been said here to show that, though inclined to sacrifice other parts of education to philosophy, he fully appreciated a sound training and was thoroughly practical in aim and method.

THE NEW REGULATIONS FOR SECONDARY SCHOOLS.

English Language and Literature.

By J. H. Fowler, M.A.
Clifton College.

THE Board of Education have had a great opportunity, and it is most gratifying to find that they have not missed it. No defect is more patent or more serious in English secondary education than our neglect of our own language and literature. From the merely utilitarian point of view, we have made the grievous mistake of not teaching our pupils the correct use of that instrument which they will have to use all their lives for their thoughts, their business, their intercourse with others; and scientific observers like Prof. Armstrong have only too abundant reason for their complaint against the schoolmaster that he has signally failed to make the teaching of English composition of any practical use as a preparation for technical studies and as a mental discipline.

From the patriotic point of view, we have been foolish in neglecting our own literature as we have been foolish in neglecting our own history. From higher points of view our indifference has been still more lamentable. "The great need in modern culture," said Mr. John Morley in 1887, "which is scientific in method, rationalistic i and utilitarian in purpose, is to find some agency for cherishing within us the ideal." is," he went on to say, "the business and f of literature." And if of literature—we m the inference at once—then, for the mass who pass through our secondary schools, of literature. He would indeed be a bold c of the classics who should assert that, as th commonly been taught in our schools, th to any large proportion of boys been fou effective agency for cherishing within us th No doubt they have been this, in a manne a degree hardly attainable by any other m those who have persevered long enough from them their best fruits. But such sym comprehension of the spirit of ancient lit seldom comes except after long and patien and not always then; every one of us has admirable classical scholars who seemed acquired little or nothing of the finer "huma with all their proficiency. It is surely not dream that English literature, which can be stood and enjoyed without any long and preliminary training, could be so taught a "an effective agency for cherishing the ide much larger proportion of English boys an

But it is not the first time that the opp has been given; and we shall do well to re how hopelessly it was missed when it occurr thirty odd years ago. In the widening curriculum of studies in secondary scho claims of English literature were not fo But little trouble seems to have been taken by a gifted or enthusiastic teacher here an to make the new study a success. The little thought about devising new method methods traditional in the study of classic were taken over. The study of English li was made linguistic, grammatical, archæ There was seldom any large considerati writer's thought and outlook upon life. T was seldom read in quantities great enough grasp of a subject, any interested pursui author's drift; it was studied, as in the cas Latin and Greek classics, line by line and word. And over the whole study fell the of Anglo-Saxon, chilling and blighting all enthusiasm in teacher and taught. Small that those who love English literature b often the first to shake their heads at ar proposals for teaching it in school.

It is evident—especially from the pa about annotated texts, to which I shall rec the Board have kept in sight the rock on w old attempts to teach English literature we frequently shipwrecked, and that they ha their best to warn us against it. On the v seems to me that the first draft of regulatic as much for the teaching of literature as reg positive or negative, can be expected to would pass the wit of any Board to invent tions on this subject that could not be perv a mischievous use. The English lesson, P. A. Barnett has said, is "at once the

ıuity of the good teacher." One think how the "suitably graduated ırcises (Repetition, Meanings, and Use Analysis, including Parsing, Para- ɔstract or Précis, Composition, or ıy still be made, in a hundred schools, ɔf alienating boys and girls from the ıey should be stimulated to love. Yet ises are all excellent in their way, and more dulness inherent in them than is ı the patient and systematic study of whatever. Yes, the "test" of the ɛr is happily his "opportunity" also. eek a stimulus for his work in the t it would be so fatally easy for him to ; and let him, at the same time, take he assurance that, if he really cares for imself—if it really is for him, too, "an ency for cherishing the ideal"—he will ay of communicating his enthusiasm to his pupils.

briefly in review the four points on ectors are to be asked to report :—

"application of a test on admission to ' at the age of twelve is worthy of note. e a reality, it will mean the devotion of to English in the early stages than has been given. But one foresees a prac- lty : teaching in English will be given ɔt in special sets, and it is far from easy ı test in any one subject on admission

time required is certainly not excessive mportance of the subject is considered. dequate, or at least would be, if only ould remember that every lesson they to be at the same time a lesson in

desire of the Board to leave "freedom cope" in regard to methods of teaching ly wise at this stage. After a few ɛrience the Inspectors of the Board will make more definite suggestions than ıbly be made now. Teaching in this ay be expected to improve rapidly if taken up widely and seriously, and the will soon be able to compare the ained from different methods and advise y. I may be permitted, perhaps, to ıy own belief in the advisability of ıtion of methods—of reading one text at a rapid rate with an eye chiefly to uestions, whilst another text, or a small the same text, is treated in a minute As to the placing of elaborately anno- in the hands of the class, I am entirely ırd's opinion. It is to be observed that ılations are concerned with students he ages of twelve and sixteen. Pupils age cannot be expected to use notes to realise the importance of getting ɔf the whole before they study the ɔarts. I believe, and have elsewhere opinion, that annotated texts may very e placed in the hands of senior pupils, say, of the sixth-form stage. An intelligent sixth-form boy is quite capable of understanding, with a little guidance, the right and wrong uses of a commentary; and though even at this stage, whether in Classics or in English, I am inclined to prefer a plain text for teaching purposes as a rule, I hold it an excellent plan occasionally to initiate the pupil, when a specially good edition offers the chance, into the use of a commentary for himself.

(4) The exercises suggested are all good if rightly used; and the requirement that sets of corrected exercises and model exercises shall be kept for inspection will enable the Inspector to keep the teaching on the right lines. With regard to "meanings and use of words," one may hope that this will not be interpreted by school-masters as "meanings and use of uncommon or obsolete words." It is the study of these, in plays of Shakespeare or elsewhere, that has brought reproach upon English literature as a school subject. What is wanted, of course, is to give the pupil an intelligent comprehension of the precise value of the words with which an educated Englishman may be expected to be familiar. A good exercise coming somewhere between the two recommended exercises of paraphrase and *précis* is the following :

Read aloud to the class a striking passage from a good author, and then let them write down the substance of it, not altogether forbidding them to use the remembered phrases of the original, but discouraging anything like unintelligent reproduction.

As the "suggestions for a four-year course" are expressly stated to comprise only "a few specimens of the numerous texts which may advantageously be studied," little criticism is necessary. All the texts are good, and suitable to the four stages. But as the publication of any list at all is likely to give a considerable bias in favour of books which appear upon it, I should like to see it enlarged in future issues. To the first year I should like to add Kingsley's "Heroes;" to the second, the poems of Campbell, some of Plutarch's Lives, and "Lorna Doone;" to the third, the third book of the first series of the Golden Treasury, containing the best poems of Gray, Cowper, Collins, and Burns; to the fourth, Hales' Longer English Poems, Carlyle's "Heroes," Ruskin's "Crown of Wild Olive," and some of the essays of Leigh Hunt and De Quincey.

The Circular issued by the Board of Education reads as follows :—

In the New Regulations for Secondary Schools the Board of Education require in each school a Course of General Instruction, including the English Language and Literature (apart from History and Geography), and extending over four years. In order to facilitate the adoption by secondary schools of systematic courses in English, the Board think it desirable to indicate in outline the points to which the attention of their inspectors will be directed, as regards :—

(1) Granting approval of the course, and

(2) Taking the course into consideration in estimating the efficiency of the schools.

Each school desiring the approval of the Board for its course in English should be prepared to submit a course providing :—

(1) A series of texts or selections graduated in difficulty, such graduation to depend not less on the method of handling the subject than upon considerations of language and subject-matter.

(2) A suitably graduated series of exercises (repetition, meanings and use of words, analysis including parsing, paraphrase, abstract or précis, composition or essay) connected with the language and subject-matter of the text.

Inspectors will be asked to report :

(1) As to the stages of instruction attained by the pupils on their entry upon the course.

The application of a test in the subject of English on admission to the course is desirable, and records of the results of such tests should be kept.

(2) As to the number of hours or periods available per week for the subject.

The time allotted to English, apart from grammar, should not be less than three periods (of which one may be home-work) ; an additional school period is desirable for grammar, though it is not essential that the grammatical teaching should be concentrated in a single period.

(3) As to the texts prescribed for study in each of the four years of the course.

Texts or portions of texts should be planned out for each term ; and, where circumstances permit, one Text a term may usefully be taken. As to length of text studied, no definite instructions are given by the Board, since the extent of ground to be covered cannot be considered apart from the amount of detail corresponding to the method of teaching adopted, or from the exercises and the like set forth in section 4 below. The Board desire to leave freedom and wide scope to schools with regard both to texts and to methods of teaching, but would strongly urge schools not to provide elaborately annotated texts for the use of the scholars.

(4) As to the exercises connected with the Text and subject-matter.

The following exercises may be suggested :—(*a*) Repetition and reading aloud, (*b*) meanings and use of words, (*c*) Analysis, including parsing, (*d*) Paraphrase, (*e*) Abstract or précis, (*f*) Composition or essay. It need hardly be said that not all the exercises here suggested should be used in each month or even in each term ; but each should be used from time to time.

Under each of the headings except (*a*) a set of corrected exercises worked by the class should be kept for the inspectors' use, and it is desirable that under headings (*d*) and (*e*) model exercises should be provided and kept in a like manner.

Suggestions for a Four-year Course in English in Illustration of the Foregoing.

The following Scheme is intended to indicate in rough outline some of the texts already in school use which may be so combined as to form a four-year course. It may also serve as a sample of the particulars which, with due allowance for local conditions (*i.e.*, examinations taken, proficiency of staff, etc.) should be submitted by every secondary school seeking the Board's approval of its Course in English.

The Board desire it to be clearly understood that the details in the appended Scheme are given merely by way of illustration, and are not to be regarded as comprising more than a few specimens of the numerous texts which may advantageously be studied.

In each year of the course poems or passages should, after study in the class, be prescribed for learning by heart ; some of these may serve also for recitation. In exceptional cases of scholars with weak verbal memories, some other exercise connected with the text may usefully be substituted.

Year of Course.	Age at Entry.	Texts : Poets.	Texts : Prose Authors.
I.	12-13	English Ballads. Lays of Ancient Rome. Hiawatha. Selected Poems, mainly lyrical (*e.g.*, Children's Treasury).	Church's Stories of the *Iliad*, *Odyssey*, *Aeneid*. Stories of King Arthur. Tales from the Northern Sagas (*e.g.*, Burnt Njal, Asgard and the Gods). Tales from the Faërie Queene. Stevenson's Treasure Island. Morris' Story of the Glittering Plain.
II.	13-14	Scott (*e.g.*, Lady of the Lake ; Lay of the Last Minstrel). Longfellow (*e.g.*, Evangeline and general selections). Selected Poems (*e.g.*, Lyra Heroica, *or* Poems of England).	Scott (*e.g.*, Talisman, Ivanhoe, *or* Legend of Montrose). Southey's Life of Nelson. Prescott (selections from Peru *or* Mexico). Voyages and Travels.
III.	14-15	Shakspeare (Julius Cæsar ; Midsummer Night's Dream ; *or* Select passages and scenes.) Milton (shorter poems). Tennyson (Idylls of the King). Gray (Elegy). Goldsmith (Traveller and Deserted Village), and Coleridge (Ancient Mariner). Wordsworth (simpler poems).	Macaulay, Biographical Essays. Scott (*e.g.*, Waverley, The Antiquary, *or* Old Mortality).
IV.	15-16	Shakspeare (Historical Plays *or* Comedies). Milton (Paradise Lost, Books I. and II.) Spenser (Faërie Queene, Books I. and II.) Wordsworth (selections). Tennyson (selections). Morris' Earthly Paradise (selections). Golden Treasury (First *or* Second Series).	Macaulay, Essays *or* History Chapters I. and II. Burke (Reflections on the French Revolution). Selections from the Spectator. Ruskin (Sesame and Lilies).

EDUCATION AT THE CAMBRIDGE MEETING OF THE BRITISH ASSOCIATION.

By G. F. Daniell, B.Sc.

IT had been anticipated that Cambridge would attract a large gathering, and, as a matter of fact, this anticipation was realised to a degree which strained the local resources.

The Section of Educational Science was well attended, and the presence of workers from France, Germany, and all parts of the United Kingdom, was a notable feature of the gathering. The M.P., the county councillor, the university professor, the conference headmaster, the inspector, and the humbler teacher were all there, and contributed to the discussions. The sexes were about equally represented in the audience, but the speakers were nearly all men, a fact to be regretted.

The following list of officers and programme of

events may interest readers who were unable to be present :—

President of the Section.—the Right Rev. The Lord Bishop of Hereford.

Vice-Presidents.—Prof: H. E. Armstrong, Mr. Oscar Browning, Rev. H. B. Gray, Dr. Keynes.

Secretaries.—Mr. W. M. Heller (Recorder), Prof. R. A. Gregory, Dr. C. W. Kimmins, Mr. J. H. Flather.

Thursday, August 18th.—Address by the President. Miss E. E. C. Jones—The Present Educational Position of Logic and Psychology. Dr. Joseph de Körösy—Comparison of the Intellectual Power of the two Sexes. Rt. Rev. Gerald Molloy—The Teaching of Experimental Science in Irish Secondary Schools.

Friday, August 19th.—Mr. J. H. Leonard—Specialisation in Science Teaching in Secondary Schools. Lieut.-Col. G. McKinlay—Realistic Arithmetic. Discussion on School Certificate Schemes, with special reference to the proposals of the Consultative Committee of the Board of Education. In this connection a report was read by Prof. Armstrong, and a paper by Canon Bell was read by Dr. Gray. The speakers included Sir Alfred Rücker, Mr. E. Gray, M.P., the Rev. R. D. Wallow, Dr. Mangold (Berlin), Principal Griffiths, Sir Oliver Lodge, Mr. Fordham (Vice-Chairman Cambs C.C.), Mr. Oscar Browning, Miss Cooper, Dr. Gray, Dr. Roberts, Mr. Mollison, Mr. Flather, Mr. Fitzpatrick and Mr. Cloudesley Brereton, and the Chairman uttered some criticisms at the close. In the afternoon an address was given by Mr. A. D. Hall on the Need of Scientific Method in Elementary Rural Instruction.

Monday, August 22nd.—Discussion on National and Local Provision for the Training of Teachers. Opened by papers from the Rt. Hon. Henry Hobhouse, M.P., and Mr. H. Maclean. The speakers included Mr. Gray, M.P., Mr. G. F. Daniell, the Rev. W. T. A. Barber, Mr. Culverwell, Dr. Ernest Cook (Chairman of the Bristol Education Committee), Principal Griffiths, Sir John Gorst, Mr. J. L. Holland, M. Duvelaque (Inspector-General of Public Instruction in France), Miss Walter, Herr Mangold, and the Chairman. In the afternoon an address was given by Prof. H. E. Armstrong on the Research Method applied to Experimental Teaching.

Tuesday, August 23rd.—Discussion upon Methods of imparting Manual Instruction in its broadest sense in the various types of schools. Opened by a paper from Sir Philip Magnus. Other speakers included Mr. Geo. Fletcher, Mr. Millett, Mrs. Marvin, Prof. Armstrong, Mr. Oscar Browning, Miss Cooper and Miss Taylor. Interim Report of the Committee on the Courses of Practical, Experimental, and Observational Studies most suitable for Elementary Schools, presented by Mr. Hugh Richardson. Report of Committee on the conditions of health essential to the carrying on of the work of instruction in Schools, followed by a discussion on "Hungry and Exhausted Children," opened by Sir John Gorst, M.P.

A perusal of the above shows that linguistic studies received scant attention, a serious defect for which—in the writer's judgment—those interested in language-teaching are most to blame. The character of the programme is necessarily determined by those who take an active share in the work of the Section, and unless the invitation held out by Prof. Armstrong at Glasgow, to the protagonists of classical and modern language tension, meets with a fuller response, the bias of the meeting will continue on the scientific and manual side. Such a one-sided development is undesirable, as well from the standpoint of the "scientist" as from that of the "humanist." That so much more attention was given to administrative than to pedagogic questions is natural at the present time, and it is a matter for congratulation that the British Association, through its Educational Science Section, affords a platform where such problems can be publicly discussed without party or sectarian influences, or with such influences reduced to a minimum. We have had another refreshing reminder that the Sir John Gorst of the British Association is a different being from the last of the Vice-Presidents of the Council. The attendance of members of local education committees is at present small, but is of good omen. The more such attendance grows the better; there could hardly be a better opportunity for those on whom such novel responsibilities are placed to meet and discuss with professors and teachers of all grades the educational needs of the time.

Of individual contributions to the proceedings, the President's address was by far the most important. The Bishop of Hereford, in the course of an extended survey of the position of elementary and secondary education in England, directed attention to many of our shortcomings. Most readers of THE SCHOOL WORLD will admit the truth of the Bishop's warning, that there is the danger that at the lower end of the social scale, through overcrowding, we may lose the *corpus sanum*, at the other end that we fall into "the idol-worship of athleticism, the depreciation of the intellectual life, and the loss of the *mens sana*."

The address points out how, in the elementary school, classes are far too large for the stimulation of the faculties of the individual child, and how wasteful is a system which allows a child's education to be stopped abruptly at the age of twelve. Local authorities need to be convinced that "expenditure on popular education higher than elementary is a wise economy, and that their bread cast on educational waters will come back to them, not after many days, but very soon and in their own homes." A Treasury grant to aid local taxation for secondary education would act as a stimulus. The President passed some severe comments on preparatory schools, and urged that a license should be required for every private school of whatever kind. (The writer of this note suspects that Dr. Percival is unaware of the great improvement in preparatory schools that has made some of them the most efficient members of our educational machinery.) Hoping great things from registration, the Bishop called on the higher members of the teaching profession to give their personal adhesion to it as a part of their duty to their profession. On the relative merits of boarding and day-schools, on the age for entering Oxford or Cambridge—the address suggested seventeen or even sixteen—there will be diverse opinions; not so, however, with regard to the improvement in teaching English history and literature, and the ability to write English, as to the desirability of which we all cordially agree.

From the discussion on "School Certificates"

a consensus of opinion emerged in favour of the teacher taking an essential part in the examination, with external inspectors to standardise. The Consultative Committee's recommendations were generally approved, but it was observed that the financial problem had been evaded or ignored, and there is some danger that the vested interests of established examining bodies may stand in the way of reform.

The principal conclusions to be drawn from the discussion on the "Provision and Training of Teachers" were: (1) that expensive buildings are worth little in comparison with competent teachers; (2) that existing supplies are running short; (3) that localisation of teachers is undesirable. And that the remedies are (1) treatment of training as a national matter; (2) universities to be the centres of training; (3) better pay for teachers, with prospects of promotion.

Even from this brief summary it will be clear that the meeting at Cambridge was a very busy one, and that the pic-nic element was quite subsidiary. This is as it should be, but it should not be forgotten that one of the most useful functions of these annual gatherings is the renewal of friendships, the meetings with former colleagues, and the opportunity for seeing and hearing in the flesh many whose acquaintance one has only made hitherto through the medium of print.

The weak point in the organisation of the Educational Section—which, it should be remembered, is only three years old—is that sufficient provision is not yet made for deciding the subjects beforehand and for advertising their nature. The permanent committees appointed to deal with definite inquiries can hardly be said to have won their spurs, but we may reasonably hope for good results from the Committee on Studies for Elementary Schools, towards whose work a grant of £20 has been made.

The Association meets in South Africa next year, and at York in 1906. It is to be hoped that the experiment of a "Press Bureau" will not be repeated, as, although the Educational Section suffered most, all Sections must have felt the farcical inadequacy of its arrangements. But while mention is made of one or two defects in the hope of helping to remove them, the general impression made on the writer was that the natural and traditional attractions of Cambridge, the variety and great interest of the subjects, the gatherings distinguished alike in numbers and qualities, were enhanced by the kindness of our hosts and the courtesy of the officials.

With the opening of the educational session, 1904-5, the courses of lectures and classes in subjects of a higher commercial education, organised and conducted during the past three sessions by the London Chamber of Commerce, will be co-ordinated with the work of the City of London College, and be continued under the direction and in the name of a Joint Board, consisting of representatives of the London Chamber of Commerce, the City of London College, and the London County Council.

THE TRAINING OF SECOI SCHOOL TEACHERS AT TH VERSITIES.

IX.—The University of Edinbu

THE practical training of teachers fc ment in public and secondary s been carried on by the Universit burgh for several years. Although the Education was established as far bacl it was not until 1892 that education, i theory, and practice, was definitely rec a subject qualifying for graduation in Ar then the attendance at the class of edu gradually increased until at the presen number of students attending exceeds these, almost without exception, are to fit themselves to become teachers (elementary), secondary, or private scho after 1892, a scheme for the practical t secondary-school teachers was inaugu organized by Professor Laurie—the l guished occupant of the Chair—and tl of students taking advantage of the c from year to year increased.

During the past year a further exte development of the system of practic was rendered necessary, owing to the demand for facilities of training, ar expressed desire of many school autho the training of the secondary-school teac be undertaken by the University in as manner, at least, as that of the elemen teacher by the various training colleg development is of a two-fold nature. aim of the scheme is to bring the vari tions charged with the training of the t co-ordination with the University. Th effected by the University recognising stitutions as furnishing in whole or i efficient course of practical training, a University in conjunction with these issuing a joint certificate testifying to of the candidate for employment in secondary schools. The second part tension of the scheme has been the s special schools at which candidates p become teachers of particular branche must attend, and receive instruction ir ing of those subjects to which they intend to devote themselves.

Since the qualifications, especially to scholarship, necessary for the obtai Schoolmaster's Diploma of the Univers burgh differ in some respects from th various English universities, it is n state carefully the nature of the qu demanded. And first, as regards the qualification. The diploma granted is of two grades. The *general* diploma graduates in Arts or Science of a Britis or of any other university recognised by and the University Court. Further,

ıg to take the *Secondary* Schoolmaster's
a must either be graduates in Arts with
's in one of the recognised Honours schools,
aduates in pure Science. The latter degree
ıned equivalent to and is recognised as an
's degree in Science. As regards the
's degree in Arts, there are at present
hed in Edinburgh six schools or depart-
ıf study, viz., classics, mathematics, modern
ges, English, history, and philosophy. As
a student may take the ordinary degree
e years; but if he wishes to obtain the
rs's diploma, the course should extend over
ırs; the concluding year being devoted to
ly of history and theory of education, and
course of practical training at one of the
sed institutions. In the case of candi-
eparing for the Secondary Schoolmaster's
., the Honours course of study should at
spread over four years, the fifth year being
to the study of the theory of education, if
not already been included in the student's
ıf study, and to attendance at the various
selected and recognised by the University
shing facilities for the practical training of
teachers.

this it is evident that the University of
rgh aims at supplying the demand for
s with higher qualifications as regards
ship than the purely Normal-College trained
In every case, the diploma is granted
graduates in Arts or Science. (It is to
d, however, that the normal colleges in
ıd send many students to the universities,
ıs the better students of these colleges
e a university course with a training-college
um to graduate before entering on school-
Further, as regards secondary-school
s, the standard of scholarship demanded is
nly graduates with Honours in Arts or
being eligible for the diploma of this

gards the practical training of the teacher,
o falls to be considered under two heads.
ıdidate preparing for the *general* diploma
tend for six months (eight hours per week)
ıf the institutions selected and recognised
University as furnishing a course of practical
, and must in addition receive the Univer-
ificate that he has duly performed the work
ourse. The institutions at present recog-
e: the Church of Scotland Normal College
and the United Free Church Normal
School. The rectors and masters of
of these institutions supervise the work
ing in conjunction with the University
ies, and each candidate for the diploma can
himself for the practical examination only
ving received the joint certificate of both
At present this diploma is recognised by
tch and English Education Departments as
ng for employment in public schools. As
Scotland, there exists no scheme of regis-
or secondary-school teachers, but graduates with the general diploma for teachers readily find posts in the junior departments of secondary schools and in the higher-grade departments of the elementary schools. The qualifications necessary, therefore, for the obtaining of this diploma are:—

(1) Each candidate must be a graduate in Arts or Science of some British or other recognised university.

(2) Must have attended a full course of instruction in the theory and practice of education in the University of Edinburgh. This course extends over the winter session, includes the study of the history, theory and practice of education, and embraces over 100 lectures on the various subjects.

(3) Must have attended the practical course at one of the recognised institutions, and must obtain a certificate that he has duly performed the work of the course.

(4) Must pass an examination both in the theory and practice of education conducted by the professor of that subject and the external examiner appointed by the University Court.[1]

For the Secondary Schoolmaster's diploma the practical training extends over a continuous period of one year. Candidates for this diploma must, in addition to taking the practical course of training for the general diploma, spend a third term of ten weeks in one of the recognised and selected schools. At present four typical schools have been selected, and in each of these schools either the rector, or the head of the department concerned, in conjunction with the Professor of Education, supervises the work of practical training, and is recognised by the University as the master of method in the particular subject or subjects. The schools at present recognised are the Royal High School, for students preparing to become teachers of classics; Heriot's School, for students preparing to become teachers of science or mathematics; George Watson's Boys' College, for students preparing to become teachers of English or history; and George Watson's Ladies' College, for students preparing to become teachers of modern languages. In every case the school has been selected either on the ground that it makes a special feature of the teaching of the particular subjects, or on the ground that the rector or head of the department is one of the acknowledged authorities in the city as regards the methods of teaching of the particular subjects.

Thus, each candidate preparing to take the secondary-school teacher's diploma must (1) be a graduate in Arts or Science with honours of some British or other recognised university; (2) must have attended the class of education in the University of Edinburgh; (3) must have attended for

[1] In the case of students taking both their degree and the Teacher's diploma at the University of Edinburgh, the total cost of the course, inclusive of class and examination fees, is under £35. Candidates of Scottish birth or extraction may, if eligible, obtain payment of their class fees from the Carnegie Trustees,* and in this way the whole course may be taken at a cost of somewhere about £12. In the case of graduates of other universities, the class and examination fees for the year of study and training necessary for the obtainment of the diploma amounts to £7 7s.

* The Secretary, Merchants' Hall, Hanover Street, Edinburgh, will, upon request, supply information as to the conditions of eligibility.

six months the practical course of training for candidates preparing to take the general diploma; and must in addition spend a third term of ten weeks in one of the selected schools. Only when these conditions have been fulfilled can the candidate present himself for the examination for the diploma.[1]

Women students who wish to prepare themselves for the work of teaching may also attend the practical course of training at St. George's Training College, Edinburgh. In the case of graduates, the course of training at this college is recognised by the University as qualifying for their general and secondary schoolmasters' diploma. But St. George's Training College also provides facilities for the training of non-graduating candidates, and students wishing to prepare themselves for the work of teaching may be admitted to this college on giving evidence that their scholarship is of such a nature as to qualify them for the work of teaching. All students of St. George's are required to attend the University class in education, and in this way combine the theoretical instruction of the University with the practical course of their own college. The number of candidates admitted each year is limited, and, as a consequence, each student receives a considerable degree of individual attention from the various mistresses of method. The fee for the year's course of training at St. George's is tweuty-one guineas.[2]

The examinations for the diploma are held twice a year—in April and October. Candidates must pass in the theory and history of education before they can present themselves for the practical examination, which is held three times a year, viz., in April, June, and October. The papers set to candidates are the same as for the pass M.A. degree, with the addition of a third paper; but the standard required for the diploma is much higher than for the degree pass. As a rule Scottish candidates include education as part of their degree course, and thus combine both the degree and the diploma examination in one.

The Arts programme, which may be obtained upon application to the Clerk of Senatus, Matriculation Office, Edinburgh, gives full information as regards both the theoretical and practical courses necessary for the obtaining of the diploma.

[1] For students who take both their degree and the Teacher's diploma in the University, the total cost of the course varies from £40 to £50 in accordance with the time taken. Students, if eligible, may obtain payment of the class fees from the Carnegie Trustees, and in this case the total cost will amount to something under £15. Candidates from other universities proposing to take the Secondary Teacher's diploma may do so at a total cost of £9 9s.

[2] On application to the Principal, St. George's Training College, 5, Melville Street, Edinburgh, a prospectus giving information regarding the various courses may be obtained.

THE Consultative Committee has recommended to the Board of Education that the establishment of supplemental registers be postponed until the teaching of the subjects proposed for the supplemental registers has been further organised in connection with general education. The Board of Education have accepted this recommendation, and for the present no further steps will be taken to establish such supplemental registers.

CONVERSATION-ASSISTANTS FOR FRENCH AND ENGLISH SECONDARY SCHOOLS.

THE ideal system of modern language professorships and masterships is for them to be held by an Englishman and a native conjointly—the Englishman to take the *version*, literature and grammar, the native to take the *thème*, dictation and conversation. A further step in the direction of this ideal will be one of the consequences of the recent successful holiday course for foreigners held at the University of London. It is proposed that the Board of Education and the Ministère de l'Instruction publique should arrange for an exchange of conversation-assistants. These assistants will be under the superintendence of the modern-language master in the schools to which they are appointed. They will converse with the boys sent to them for two hours a day; and in return will receive free board and residence if appointed to a boarding school, or an equivalent in salary if appointed to a day school.

It has been found best to send boys to a conversation master two or three at a time; thus the discipline difficulty is got over. When the assistant has come to know the boys and has proved that he can obtain good work out of them, more than three can be sent at a time. Those boys who are about to present themselves for an oral test in modern languages, which should be a compulsory part of every examination, would be taken separately for six weeks previous to their examination. Excellent results can be thus attained. It is obvious that great care must be exercised in the first choice of assistants, for on their suitability the success of the experiment will depend. Many English headmasters know little of modern languages, and are still apt to reckon them as equivalent to drawing, music and drilling, in educational value. It will be difficult to persuade a headmaster of this type to receive a foreigner into his school, even on the advantageous terms we have mentioned. But if the foreigner is not very capable, the system will be damned in his eyes for evermore. The best men to choose would appear to be *licenciés-ès-lettres* who are preparing for their *doctorat* or *agrégation*. But would they come for a year *au pair?* It would be worth the while of the Board of Education to consider whether, in order to get the right men at first, it should not add some small salary to these posts.

The following abstract of documents prepared by the Board for publication should be of service to masters who may desire to take advantage of the scheme, which should do much to strengthen the *entente cordiale* between the two countries.

English Assistants in French Lycées.

Though not taking any part in the regular instruction of the pupils, the assistant will be regarded in all other respects as the colleague of the *professeur*. He will be lodged and boarded at the institution to which he is attached. He will have a room to himself and take his meals with the *répétiteurs*; and his main

duty will be to conduct small conversation groups of five or six pupils. The assistant should himself possess a good English accent, free from peculiarities, and take special care to secure proper intonation of the sentence from his pupils. As an example of the kind of difficulty which the French student experiences, it may be mentioned that, while in the English sentence there is a strong and clearly graduated word-stress, in the French sentence the word-stress is level, and also that, while in English the pitch is generally lowered at the end of an affirmative sentence, in French it is raised in a manner analogous to that of an English question.

Outside the stated hours of work (about two hours daily) the assistant is left perfectly free, and he will have ample opportunity for pursuing his own studies in French.

In University towns all University lectures will be thrown open to the assistant free of charge. They may in all cases attend all lectures and classes in the Lycées. The masters will be requested to give them full explanations as to the methods of teaching employed. These opportunities for a comparative study of methods, notably with regard to the teaching of the mother tongue, so efficient in France, may afford a valuable training in pedagogics.

Candidates for such posts should preferably be graduates of some British University, and should forward their application to the Director of Special Inquiries and Reports, Board of Education Library, St. Stephen's House, Cannon Row, Westminster, S.W., enclosing testimonials as to character, capacity and teaching experience, and a medical certificate of health. It will also be necessary for each candidate to have a personal interview with the Director at his office.

French Assistants for English Secondary Schools.

Modern language instruction to be effective is now seen to demand a greater degree of continuity in teaching than was at one time thought necessary. Nevertheless there are many ways in which such a young foreign teacher may give valuable assistance. His main usefulness will lie in the direction of immediate contact with the boys in order to develop their powers of conversation. In the ordinary class work the conversational aim must always be strictly subordinate to the instructional; and the limits of the time-table will hardly ever more than suffice for the methodical acquisition and effective command of that organised knowledge of the language which it is the aim of the instruction to secure. For this side of the work there would be little advantage to be derived from the substitution of a young foreigner for the experienced English teacher, nor would the French Government consider the conditions as satisfactory where a definite share in this instruction is assigned to the assistant. Such an arrangement would not only impose on him a very considerable amount of preparation but curtail too largely his own opportunities for study, but it would also divert his energies from their proper sphere, viz., the development of the conversational powers of the boys.

To this end he should be employed to conduct small "conversation groups" of five or six pupils, and it will generally be found desirable to limit these groups to boys over fourteen. Attendance at these exercises should be quite voluntary and regarded as a privilege and in some measure as a reward for special progress in the ordinary class work. In these groups the lesson should be made as little formal as possible. It should be constantly borne in mind that it is not intended to convey to the pupils fresh knowledge, nor even, primarily, to practise them in that which they have already acquired. The chief object is to induce the boys to talk rapidly on subjects within their grasp in a manner which is not possible in the class-room. The assistant will guide the conversation, but not control it too rigidly, by means of a regular succession of question and answer; nor will he be constantly insisting on full sentences. Rapidity is to be the keynote of such exercises, and their aim an effective use of conversational forms.

Though these assistants are not members of the staff, and not more than two hours' work a day is to be demanded of them, their services will necessitate some remuneration. In boarding schools it would probably be sufficient if arrangements could be made whereby they should be boarded and lodged in one of the boarding houses. In schools where such an arrangement is not possible, either from the fact that they are day schools or for some other reason, it would be necessary to offer such salary (say from £60 to £75) as would cover the cost of board and lodging.

Headmasters who are willing to co-operate and to employ such assistants are requested to communicate with the Director of Special Inquiries and Reports, Board of Education Library, St. Stephen's House, Cannon Row, Westminster, S.W.

ON THE UTILISATION OF LOCAL MUSEUMS, WITH SPECIAL REFERENCE TO SCHOOLS.[1]

By the Rev. W. Johnson, B.A., B.Sc.

The selection of this subject for discussion is probably due to certain remarks made at the Southport meeting last year, when it was hinted that the local museum was often the dumping ground of curious finds for which room could not be provided by the discoverers, instead of being the centre of living interest and new growth. I presume the Association regards the local societies *as feeders*, and therefore puts on us the duty of laying the foundation of the scientific habit, and of providing the means of satisfying the longing for more insight into nature. It will be at once apparent that the subject has certain limitations. We must confine ourselves almost entirely to the natural history side of science study, partly because the general interest of workers lies there, and partly because the local museums lack storage room for specimens suitable for illustration of the other branches.

In discussing the question of "the Utilisation of Local Museums," in connection with the science work of our school, I lay down the following propositions: (1) a great amount of material lies *buried* in local museums; (2) it needs *proper description* and *exhibition* to make it available for the use of young students; (3) it is very desirable that *local* natural history, rather than general science, should be *illustrated and studied* in this connection.

Collecting, merely for possession of a collection, has been sufficiently disparaged without our adding another word of condemnation. When a young student approaches a specimen, a mere label is often quite inadequate to attract and inform him. Therefore, it is necessary that a more or less detailed description, with drawings of separate parts, should be placed with the specimens, *side by side*, in order that there may be no mistake. The method adopted in the Natural History Museum, Cromwell Road, London, is, in my opinion, most effective to this end. There, the admirable handbooks, issued in each section, are taken, paragraph by paragraph, and each statement made in the whole description is represented by a real object by its side, so marked by coloured papers, arrows and guiding lines, that a student who works through the cases in succession follows a natural sequence of treatment under a scientific guidance. I have often thought that local museums have failed in

[1] A paper read at a Conference of Delegates of Corresponding Societies of the British Association, Cambridge, August, 1904.

developing the scientific habit because they have given undue prominence to what is *special* or *rare*. Now a beginner wants help in identifying what is *common* or elementary, and when, on going out on his field-days, he discovers none of the rarities displayed in his museum, he is too apt to think that none of his work is worth the trouble, or to be checked at the start in the proper classification of his work.

Having made it my aim to visit local museums wherever possible, I am able to speak at first hand of the hopeless confusion which misleads and repels in spite of the abundance of most valuable material. Some Yorkshire museums need immediate reclassification and arrangement.

I would propose that each town should have a strictly limited collection of the natural objects which are commonly found in that area; that the flora and fauna should be separate; that the district in which each is to be found should be indicated; that, in the case of the flora, the months during which the plants may be found should be added, and that detailed descriptions by competent persons should be attached; that in every museum there should be a large geological map of the area, with suitable vertical sections, showing the connection between the underground conditions and the variety of the life on surface.

I should like to see in each museum a collection of the natural orders of plants, pressed specimens obtained locally, and easily accessible to individual students, in order that the flora of the district might be within the knowledge of each boy and girl educated in the area. So, too, with the rocks. There should be a complete series of hand specimens of rocks illustrating the succession of strata in the neighbourhood, and, if the rocks are fossiliferous, or capable of economic use, then the fossils should be associated with the rocks, and the economic products exhibited and explained. Each section should be kept in its own room for separate use.

This small teaching collection need interfere in no respect at all with the general purpose of the museum as the receptacle of the objects of interest of all kinds, but would ensure, to all who wished it, a proper start on right lines, and would engender in them a keen desire to proceed to a wider knowledge of that branch which interests them.

Now comes the question whether we should take the specimens to the classes in schools, or take the classes to the specimens in the museums. Personally, I am all in favour of the latter. I have watched with interest the growth of the latter plan in Leeds, where excellent results appear to be accruing from the admirable lectures and demonstrations of the curator of the Leeds Museum, Mr. Crowther. But apart from the evident success of this scheme, it would teach the young student to regard the museum as the centre of his work, and having been taken there by his teachers for the work of a course, he would soon be found there on his own account, searching for himself answers to questions which have arisen from his own work, and every museum would become the training ground of a new set of investigators. It may be asked when can time be found for all this? And that really is a serious question. Yet there is a good answer. During the winter holidays, afternoon demonstrations could be given in every centre without dislocating any time table, and, as there is, I believe, a strong tendency to reduce the demands of "home lessons," a course of evening demonstrations during term could be no heavy infliction on the children, and would be welcomed alike by them and their parents.

Now, presuming we have the contents of our museums in order, so reduced in number as not to be bewildering, and so definitely described as to be intelligible, we should easily be able to get the young student to take interest in them. By taking our classes to the museum we should, at any rate, teach him the way to the museum. It would accustom him to the idea of resorting to a definite place for the solution of his difficulties. It would make the museum the centre of distribution for much useful knowledge, whereas it is too often a swamp in which the streams of knowledge lose themselves. If we could ensure, on the part of the teachers, a definite acquaintance with the contents of the museums, it would be easy for them in the course of their lessons to refer their pupils to specimens which more fully illustrate the matter under discussion, and thus the grafting of one upon the other would be effected. I am not quite sure whether it would be better to depend on the curators of the museums (or of sections of the museums) for the descriptions or demonstrations, or to attempt to put this on the teachers of the schools. The advantage of the former way would be the intimate acquaintance with the subject and with the specimens of the museum; of the latter a better acquaintance with the students and their powers, and probably a better aptitude for imparting knowledge due to professional training. If, as is, I believe, the case of the Curator of the Leeds Museum, these qualities can be found combined in the curator, I should have no hesitation about entrusting the whole of the work to him.

I imagine that one of the greatest difficulties likely to be met with in the utilisation of our museums will be that of continuity of work, for if frequent changes take place in these offices the development of the work must suffer from want of sequence. It would probably be wise to secure, if possible, the attention and care of the science teachers of our schools. We should thus gain the double advantage of a definite interest in a science, and a definite interest in the schools which are using the museum and the course of work. The increasing number of science teachers is a guarantee of a continuous supply of curators.

Especially do I think it advisable and desirable that a course of, say, four or five lectures should be given during the winter holidays on the elementary laws of meteorology, with an explanation of the instruments which are used for obtaining weather records, both how they are made, and how they are used, together with the chief corrections which are needed to ensure an accurate result. In many museums these instruments are accessible to the public, and a knowledge of their use ought to be common property.

There appear to be in connection with museums few rooms which are capable of accommodating a class of students for demonstrations. This is an obvious defect, if anything more than individual work is to be attempted, and one of the first improvements to be effected by our Museum Trustees will be the provision of such rooms with lanterns, screens and lecture-room appliances adequate for the proper accomplishment of this work.

I ought to say one word as to the cost of this new development. Many of the curatorships of our museums are honorary, and some carry a mere acknowledgement of work done. We all like to think of education as so attractive in itself and so far producing in our pupils a thirst for more knowledge, gained in a freer and larger way than is possible in schools. Moreover, we wish the museums to be the centres of diffusion of knowledge and the meeting place of kindred spirits. There appears to be no good reason to be urged against the view that the State should, for services of this kind well rendered, provide an adequate sum for recompense, and it should be possible for our local authorities to hand over an adequate sum to the trustees of local museums which are willing thus directly to help forward and expand the higher science-teaching of our schools, corresponding control being, of course, in every case given for the proper disbursement of the assigned money. This work is, at any rate, as well worthy of this support as are free libraries, or municipal bands, or art galleries, to which, of course, I have not the slightest objection.

Summing up my points, I should like the great interest in nature study which has lately sprung up to be linked definitely with the museums, that these may help the movement and in return be helped themselves; that the provision made by curators should be wisely curtailed and definitely directed; that the professional instinct and pride of the science teachers should be called upon to assist in a great work; and that the success of the movement should not be imperilled by the premature uprising of the false economist, who has had no opportunity of seeing what other nations can do and who wishes to appraise the value of any work by its immediate value in current coin.

CAMBRIDGE UNIVERSITY LOCAL EXAMINATIONS.

Set Subjects for December, 1905.

Religious Knowledge:—*Preliminary.*—(*a*) St. Mark; (*b*) II. Kings i.-xvii.

Juniors.—(*a*) II. Kings; (*b*) St. Mark; (*c*) The Acts of the Apostles, i.-xvi.

Seniors.—As Juniors.

English Language and Literature:—*Preliminary.*—Scott, "Lay of the Last Minstrel," Introduction and Cantos, i.-iii.; or (*d*) Church, "The Story of the Odyssey" (a portion).

Juniors.—Shakespeare, "Twelfth Night"; or (*c*) Scott, "Lay of the Last Minstrel"; or (*d*) Scott, "Ivanhoe."

Seniors.—Shakespeare, "Twelfth Night." Milton, "Samson Agonistes." A paper of questions of a general, not a detailed character, on Shakespeare, "Macbeth"; Scott, "Ivanhoe"; Tennyson, "The Princess."

History, Geography:—*Preliminary.*—History of England. The paper will consist of three sections on the periods (*a*) 1066 to 1485, (*b*) 1485 to 1603, (*c*) 1603 to 1714 respectively. Candidates may if they wish select questions from all three of the sections, or may confine themselves to two or one of them.

Geography. Great Britain; and general Geography.

Juniors.—(*a*) History of England. The paper will consist of three sections on the periods (*a*) 1066 to 1509, (*b*) 1509 to 1688, (*c*) 1688 to 1832 respectively. Candidates may if they wish select questions from all three of the sections, or may confine themselves to two or one of them; or (*b*) Outlines of the History of the British Empire from A.D. 1763 to A.D. 1878; or (*c*) Outlines of Roman History from B.C. 510 to B.C. 266.

Geography. The United Kingdom of Great Britain and Ireland, and Africa.

Seniors.—(*a*) History of England. The paper will consist of three sections on the periods (*a*) 55 B.C. to 1509 A.D., (*b*) 1509 to 1714, (*c*) 1714 to 1867 respectively. Candidates may if they wish select questions from all three of the sections, or may confine themselves to two or one of them; or (*b*) History of the British Empire as Juniors; or (*c*) Greek History from B.C. 431 to B.C. 359.

Geography as Juniors.

Latin:—*Preliminary.*—Cæsar's "Helvetian War," adapted by W. Welch and C. G. Duffield (Macmillan).

Juniors.—Cæsar, "de Bello Gallico I."; or Virgil, "Aeneid II."

Seniors.—Livy V. 1-40; or Cicero, "Pro Murena"; Virgil, "Aeneid II."; or Horace, "Odes I."

Greek:—*Juniors.*—Xenophon, "Anabasis IV."; or Euripides, "Medea" (omitting lines 96-212, 410-444, 626-657, 719-860, 971-996, 1076-1110, 1246-1289).

Seniors.—Plato, "Apology"; or Demosthenes, "Olynthiacs"; Homer, "Iliad XXIV."; or Euripides, "Medea."

French:—*Juniors.*—Mérimée, "Colomba."

Seniors.—Mérimée, "Colomba"; Augier, "La pierre de touche."

German:—*Juniors.*—Hauff, "Das Wirthshaus im Spessart" (omitting "Das kalte Herz").

Seniors.—Goethe, "Iphigenie"; Freytag, "Die Journalisten."

HISTORY AND CURRENT EVENTS.

This summer, the Empire of Austria celebrated its hundredth anniversary, and we are reminded of the curious circumstances of its creation. Till 1804, there had been in Western Europe but one Empire, that which dated from Augustus, which through chances and changes had outlasted every other institution but the Christian Church. And now a Corsican upstart wished to pose as the successor of "Charlemagne," and with ignorant confusion of titles intended to call himself Imperator Francorum. Whereupon the *chosen* head of the Holy Roman Empire, as if forgetting also the meaning of his own title, began to call himself *Hereditary* Emperor of Austria. So began Emperors *of*—this place or that. Never before in official documents had the word Emperor been followed by a possessive. In two years more the old Empire practically ceased to exist, and the world has since been "Romeless." It has no centre, even in name, and is vainly seeking a substitute in Papacies, Hague Conferences and international treaties of arbitration.

The war between Russia and Japan is having its effect on sea-borne commerce. Merchants in England as well as elsewhere are understanding from practical experience the meaning of the phrases "war risks" and "contraband." Leaving to them the discussion of such questions as arise for daily solution, and the problem of maintaining or abandoning our direct commerce with the "Far East," we remark how ambiguous International Law is on many questions of real urgency. What is, and what is not, contraband of war? What may and what may not be done to a neutral vessel? Such questions seem to have no authoritative answer. And in the absence of law, and of any central power to enforce its rules if there were any, each Power does what seems good in its own eyes, subject only to the views of another Power strong enough to enforce those views. Thus, is International Law, law at all? It is an old question, and is connected with a larger one. What *is* law? But the present circumstances are showing us that, in some matters at least, there is no authority among the nations—and therefore, properly speaking, no law.

There is a proposal to adopt for India a time standard such as is in use for Europe and the United States of America. It is interesting as one of the signs, in these scientific days, of the growing unification of a community. As yet there have been different time standards for the Bombay, Madras, Calcutta, and Rangoon districts, suited to their respective longitudes, and adopted naturally and without reflection, for their local needs. But now that the various parts of our Eastern dependency and the various semi-independent states are becoming connected by railway and telegraph, it is desirable, even if not absolutely necessary, that there should be uniformity in clocks and watches. Yet, so large is the area covered by the word "India" that two such standards are necessary. For the country from the Himalayas to Ceylon, the time is to be fixed 5½ hours east

of Greenwich; for Burma, 6½ hours east of the same. Thus, in chronology, as there are the United States of Europe, and of America, there will be in future the United States of India. Are these things typical of further unity?

"When *we advised* His Majesty to put in *His Majesty's* most gracious speech from the throne," a certain sentence, "*we* were using no vain phrase, but *we* meant precisely what *we* said, and" you "may rely upon *our* doing, &c." How old forms survive in the British constitution! That constitution has been two or three times in history set aside in favour of "written constitutions," based more or less consciously on theories, but it has in each case been revived with all its anomalies, and has undergone only such changes as can be described as "remedies for grievances." So, in form, the members of the cabinet still do but *advise* the king how to make *his* speech, but it is the ministers that carry out the measures which His Majesty is advised to promise, and, while the king can do no wrong, the ministers, by whose advice he acts, are responsible for the results of such action. In what does that responsibility consist?

ITEMS OF INTEREST.

GENERAL.

An attempt to solve the problem of the relation of Evening Continuation Schools to day schools has been made by the Recreative Evening Schools Association in a Bill which was brought into the House of Lords towards the end of the last session by the Bishop of Hereford. In his evidence before the Royal Commission on Primary Education (1888), Dr. Paton, one of the hon. secs. of the Association, mentioned several respects in which the scheme of State education was unsatisfactory. In particular, he pointed out that, though a child is allowed to leave school at the latest when twelve years of age, the Factory Acts prohibit his regular employment as a wage-earner until he has attained the age of thirteen. The intervening period he rightly considered one of great danger to the youth. Dr. Paton's remedial measures are embodied in the Bill referred to above. It would allow a local education authority to (*a*) fix the minimum age for total exemption at thirteen, (*b*) make total exemption in the case of a pupil who has not reached the required standard of attainment conditional upon his attendance at an evening continuation school until he is sixteen or reaches the required standard, (*c*) make partial exemption similarly conditional, (*d*) make twelve the minimum age (under certain conditions of attendance at an evening continuation school) in the case of boys who have definite agricultural or horticultural employment. The raising of the minimum age from twelve to thirteen would, of course, mean the raising of the standard of attainment, and we agree with Dr. Paton in his contention that one great advantage of this would be "that it will make the whole course of instruction fuller and more thorough, and more truly educative."

Several subjects of prime importance to the teaching profession were considered at a conference in connection with the Association of Assistant-masters in Secondary Schools held at Leeds on September 10th, Mr. G. F. Daniell, Chairman of the Association, being in the chair. At a meeting held before the general meeting the Council of the Association approved the scheme for the proposed federation of secondary teachers, each association retaining its individual organisation and the incorporated association having representation on the council of the federation. At the general meeting the Chairman said the Board of Education had been approached with the view of getting improved conditions of the tenure of office of assistant-masters; but the reply of the Board to the joint propositions of the two associations of headmasters and assistant-masters had not been of a satisfactory character. The Board had been asked to receive a joint deputation in regard to the tenure resolution adopted by both associations in January last; but, in a reply to Canon Bell, the Board expressed itself as not at all satisfied that the main object of the resolutions—the imposition of restrictions on the power of a headmaster to appoint and dismiss assistant-masters—would, if generally adopted, work for the benefit of secondary schools. Legislation would be necessary in order to carry the resolutions into effect, and little hope was given that such action would be taken at present. Moreover, "the duties proposed to be thrown upon the Board would not merely entail expenditure of time and money, but would be of a very delicate and difficult character, and the Board, on the general ground as well on account of the labour and expense involved, could not at present undertake their discharge." The Council of the Association is, however, strongly of the opinion that for the consideration of such an important subject it is necessary that the Board should receive a joint deputation and hear fully the arguments of both parties. The executive committee has, therefore, been authorised to take measures to bring the matter further under the attention of the Board.

Government Departments, as a rule, cannot be accused of undue haste in the despatch of business, but the Board of Education has lost no time in expressing its views on the recommendations of the Inter-Departmental Committee on Physical Deterioration. (See "A National Code of Physical Training," by Dr. C. E. Shelley, School World, July, 1904.) In a circular letter, dated August 22nd, after mentioning the sources whence the Report and Syllabus referred to may be obtained, the Board of Education proceeds to point out several important findings of the Committee, with a commendation of them "to the earnest consideration of your Authority." It is intended that all training-college students shall be qualified to give instruction on the lines laid down in the Report, and the Board wishes all existing teachers to have facilities afforded them for gaining this qualification. Furthermore, it considers that the Syllabus should be adopted in all public elementary schools as soon as is reasonably possible. The Board of Education circular gives us the impression that it is in an undignified hurry, for some reason or other, to have the recommendations of the Committee put into actual practice, but, even merely as a sign of the times, we welcome this example of official enthusiasm.

At their meeting in August the members of the Executive of the National Union of Teachers discussed the regulations for secondary schools. Exception was taken to the early age—eight or nine—at which children are to be allowed to enter a secondary school, and general dissatisfaction was expressed at the official recognition of social prejudice in this country which apparently necessitates the existence of "class" schools. One speaker suggested that the local authorities should be persuaded to discourage the teaching of primary subjects in secondary schools, and another member averred that the preparatory sections of secondary schools were doing the same course as children in board-schools; which statement, we are sure, is somewhat exaggerated. The comparatively heavy fees charged by secondary schools were declared to be altogether prohibitive, and detrimental to the interests of the children of the working classes. Finally, it was decided to prepare a memorandum for the consideration of local authorities.

At the Certificate Examination, 1904, of the Oxford and Cambridge Schools Examination Board, 2153 candidates for the

ıer Certificate presented themselves, of whom 451 girls : candidates for Letters only, *i.e.*, success in at least two ects: 1006 Certificates were awarded and 368 Letters given. s 59 per cent. of the boys were successful. The chief ces of failure were:—Greek (1026 candidates), 47·5 per . failed; English (1156 candidates), 46 per cent. failed. history figures are somewhat curious—1323 candidates, passes—a result by no means confirming some recent pro- ıcements on the subject of history teaching in public schools. results in the other subjects do not call for special comment. the Lower Certificate there were 1066 candidates, 525 of m (49 per cent.) were awarded Certificates. It is interesting ote that history proved the chief stumbling-block to Lower lificate candidates: 45 per cent. of the 847 who offered ory failed. In English and Latin the percentage of failures almost the same—about 43.

n Saturday, August 20th, Keighley Mechanics' Institute was ally handed over to the Corporation as the local authority. e Duke of Devonshire, in an address upon the responsibilities the Corporation had thereby incurred, whilst disavowing claims to be considered an educational expert, took the ortunity of saying a few words upon the objects of the ional Association for the Promotion of Technical and Second- Education, with which he was associated. The members of Association have pointed out that our industrial success no ger depends entirely upon our great natural resources, or n the energy and industry of our own people. The applica- of science to industry has revolutionised the conditions of istry, and other nations appear to have realised this fact ıer than we have, and to have made more adequate provi- for the necessary scientific instruction of the industrial ses. These efforts are having a prejudicial effect upon our mercial and industrial supremacy. It is, said the Duke, recognised that scientific instruction is a necessary element ur industrial success; the responsibility for the provision of ı instruction rests essentially with the State. The transfer- e of the Institute to the Corporation is an act in complete ordance with his principle of the control by a single Authority ll branches of Education. The decentralising tendencies until recently were in existence have been most unsatisfac- , but now, although much controversy, political and religious, ıpered its effective working, the Act of 1902 has at least bled every parent to know what is the authority which is ponsible in the first place for the provision of the education of children during the age of compulsory attendance at school, to know that the same authority is responsible for giving to children, after that period, the continuous education which fit them for their work in life. With regard to this after- cation the Duke pointed out that the municipal schools will vide for the children who have attended elementary schools good and efficient a training for their future careers as is open he children of the richest and highest in the land.

MANY intending teachers will be interested in the scheme for diploma that will be granted by the University of Oxford to graphy students, 1904-5. Commencing October 24th, the ıder in Geography (Mr. H. J. Mackinder) will lecture kly on "The Historical Geography of Europe." The turer in Regional Geography (Dr. A. J. Herbertson) will ure (1) weekly on "Illustrations of Geographical Method"; twice weekly on "The Regional Geography of the Southern ıtinents"; and (3) weekly on "Types of Land Forms." Herbertson will, in addition, give practical instruction in ional geography and in geomorphology, and will direct eekly seminar for the discussion of recent geographical ature. Students of ancient geography will read with the turer (Mr. C. B. Grundy), and the Lecturer in the History of Geography (Mr. C. R. Beazley) will direct the studies of those who take up this branch of geography as a special subject.

THE problem of what to do with our children in the holidays, which is or should be a serious consideration for thousands of parents in large towns, has recently been successfully solved by Mr. Edward Howarth at Stratford. Realising the fact that probably more than 90 per cent. of the children that attend the day schools in large manufacturing centres never leave town for a holiday, but spend their "vacation" in questionable diversions in streets and alleys with no restraining influence, Mr. Howarth started a "holiday school" for 280 boys and girls belonging to three of the poorest elementary schools in West Ham. So far as possible the usual educational equipments, such as desks, slates, and blackboards, were dispensed with, and a diversified course of instruction and recreation was successfully completed by teachers and taught equally enjoyably. The practical utility of the scheme may be estimated from a list of "subjects," which includes swimming, modelling, needlework, woodwork, painting, bed-making, basket-making, gardening, whilst many hours of recreation were spent in singing, dancing, and the like. More local authorities might next year very profitably emulate the example set by the West Ham Education Committee in aiding efforts of this kind by the loan of buildings, &c. A similar school was conducted by Miss Ethel Lancaster at Walworth.

AT the meeting of the Trade Union Congress, Leeds, on September 4th, the following resolution was proposed:—"That, with the view of checking the physical deterioration existing among our population, the Government should at once grant educational authorities the powers necessary to provide at least one free meal a day for children attending State schools." Speaking in support of the resolution, Sir John Gorst said that at least 90 per cent. of the degenerate children are born healthy and well nurtured. By far the most important cause of the present physcial deterioration is lack of sufficient and wholesome food. Starvation is really the ailment from which the majority of so-called mentally defective children are suffering. Amongst the other remedial measures that ought to be enforced, Sir John enumerated: pure air and water, open-air teaching, medical inspection and care. Our readers will be interested to learn that several members of English municipal bodies recently visited Scandinavia, and in Christiania had the opportunity of visiting a public kitchen, whence hot dinners are sent out to the various schools. More than 7,000 children were fed in this way last year, those who were able to afford it, 9 per cent., paying about 1½d. for each meal.

IN "Consider the Children," by Honnor Marten, seven main contentions are brought forward:—(*a*) Infants should not attend school under five years of age. (*b*) All children who need it should be fed. (*c*) There should be medical inspection of all elementary schools. (*d*) Corporal punishment should be abolished. (*e*) Greater caution should be exercised in sending young children to truant and industrial schools. (*f*) Teachers should receive a broader training. (*g*) Only secular teaching should be given under the education authority. In the present state of educational matters in this country several of these reforms are counsels of perfection, but Miss Marten makes out a good case for each of them in the statistics, &c., that she quotes. Especially informative are the chapters on Compulsory Contagion, and Mental Repletion and Bodily Starvation.

IT will be remembered that the Admiralty, about three years ago, decided to dispense with competitive examinations for cadetships in the Navy. In the September *Cornhill* the policy

is declared, by Mr. Arthur Benson, to be eminently satisfactory, and its success is calculated to influence the methods of entry into the Civil Service generally.

The 70th annual report of Bootham School, York, Natural History, Literary and Polytechnic Society, is to hand. The editor has to deplore the loss of interest in natural history in the school, due, we are informed, to the growth of popularity of other hobbies, notably photography and the workshop. The report contains an interesting account of the out-of-school occupation of the boys at Bootham.

We have received from the Board of Education "Regulations relating to the Examinations of Blind Candidates for Teachers' Certificates," and "Regulations and Syllabus relating to the Examination of Blind Candidates for admission into Training Colleges for the Blind," both for 1905.

The *Australasian Schoolmaster* has commenced its twenty-ninth year of publication with its issue of July 20th. Mr. Crook's article, "A New Method of Teaching English Composition," which appeared in the June number of The School World, is reprinted. We learn, from other sources, that the article has attracted much attention.

At the meeting of The Association of Chambers of Commerce of the United Kingdom held at Manchester on August 28th and 29th, the agenda included resolutions from the Leeds and Blackburn Chambers urging upon the Government the necessity for the organisation of educational courses of work in modern languages and commerce, and for a more liberal subsidy of such courses in evening and day technical schools.

The students of Birmingham University entered into possession of part of the new buildings on September 5th. The smelting house of the metallurgical department is the first to be ready for students, and it was here that Professor Turner conducted a large party to inaugurate work in the new buildings by the lighting of a Siemens steel furnace, which, it was expected, would be in full working order by the end of the month. Close upon £10,000 has been spent on the building, which, it is stated, has a unique collection of apparatus adapted to commercial purposes.

The Report has just been issued of the Director of Education in the Orange River Colony, recording the work of the Education Department for the year ended June 30th, 1904. In connection with this, the publication by Messrs. Longmans of a paper by Dr. Brill is very opportune. Dr. Brill is Rector of the Grey College, Bloemfontein, and the paper referred to was read at a conference of principals of Government schools in the colony. Dr. Brill pleads for a liberal interpretation of the Code regulation that Dutch may be taught in every school, and it shall, if demanded by parents, be taught for three hours per week. Three-quarters of the population is Dutch, and bi-lingual schools therefore have a strong justification for their existence. As Mr. E. B. Sargant, educational adviser to Lord Milner, points out, in a letter to the Rector of the Grey College, the principals may make or mar the teaching of Dutch as an optional subject. To Dr. Brill's contention that English enjoys undue advantage as being the compulsory medium of instruction (except in Dutch and Bible history) Mr. Sargant argues that this advantage is more than counterbalanced owing to Dutch being the medium of conversation in the home-life. The whole question is a complicated one, but it is evident from the arguments of Dr. Brill on one hand, and the Education Department, as represented by Mr. Sargant, on the other, that the points at issue will be decided in no narrow, partisan spirit, but that the factor of education in the welding together of the two races in South Africa will be beneficial in its far-reaching effects. urge our readers to procure the pamphlet for them cost is 1s.

SCOTTISH.

The report on secondary education in Scotlanc 1903-4 is, on the whole, a very encouraging record and is of special interest as being the last which w under the signature of Sir Henry Craik. The r governors of higher schools, it is stated, are yea broader view of their duties and responsibilit seeking to adapt their schools to the advancing of the time. In some cases, however, it is pointed premises of the secondary schools do not compar with those of primary and higher-grade schools, th which in recent years has been greatly raised. On disappointing features in the report is the evidence statement that pupils are withdrawn from school a early to benefit by the liberal educational faciliti been provided. The only remedy for this lies in t a more enlightened public opinion. It is not unco comparisons drawn between the results achieved schools in Scotland and in Germany. Such comp rightly contended, are altogether unfair, inasm ignore the difference in the conditions that pre two countries. So long as the Scottish lad conti school two or three years earlier than his German c so long must the responsibility rest not upon teach parents.

The report again directs attention to the cont growth of over-pressure in the upper classes of ma schools. Enquiries made in different parts of the c that it is no uncommon thing for boys, and ever spend five or six hours nightly on home lessons. strain thus entailed is bound to be excessive, and react unfavourably on the intellectual as well as on development of the pupils. Sir Henry Craik beli ultimate cause of this over-pressure is to be found ir attain a very high degree of excellence in too wid subjects. The only effective remedy is to intro elasticity into the curriculum of the most advar This curriculum in a large majority of cases is d the requirements of the university bursary comp little progress in the direction of relieving the te looked for till the university authorities lessen thei regard to the number of subjects required.

Sir Henry Craik, K.C.B., in opening a scien of Pulteneytown Academy, Wick, delivered a speec tendencies of education, with special reference to th State in further directing and providing for the edu youth of the country. It was not enough, he held, them from five to fourteen, and then turn them adri critical and impressionable age, fourteen to eighte their own course. He was strongly of opinion tl during those years ought to bring them under some influence, mental as well as physical, that wou better for their life work. Unless this were do the value of the training between five and fourte lost.

Mr. George Macdonald, at present Assistan Higher Inspection, has been appointed to act Secretary, in Edinburgh, to the Scotch Education He will enter upon his duties there in October. has also been made of the appointment of Captain late of the Argyll and Sutherland Highlanders, as

Physical Education in the Secondary Schools in Scotland. He will also inspect the classes in this subject in the training colleges, as well as those for the further instruction of teachers, conducted under Art. 91 (*J*) of the Code.

A COURSE of instruction for the training of secondary teachers has just been instituted by the Senatus of Aberdeen University. This course is open only to graduates, and to those who satisfy the Senate of their fitness to profit by the training. The course of training will extend over a full year, and will include both theory and practice. The theory will comprise the history, science and methods of education. The practical part of the training will extend over about 28 weeks, with a minimum of 250 hours. The inclusive cost of the course for each student will be ten guineas.

IRISH.

THE results of the Intermediate examinations held last June were published early in September. The following is a summary of the boys' and girls' results respectively:—

BOYS.

	Senior Grade.	Middle Grade.	Junior Grade.	Preparatory Grade.	Total.
Number examined ...	326	915	3,067	1,968	6,276
Number that passed					
(*a*) With Honours	100	249	367	—	716
(*b*) Without Honours	121	487	1,494	1,083	3,185
Total number that passed	221	736	1,861	1,083	3,901
Proportion per cent. of Passes	67·8	80·4	60·7	55·	62·1

GIRLS.

Number examined ...	110	311	1,165	668	2,254
Number that passed					
(*a*) With Honours	31	70	115	—	216
(*b*) Without Honours	43	162	604	434	1,243
Total number that passed	74	232	719	434	1,459
Proportion per cent. of Passes	67·3	74·6	61·7	65·	64·7

THERE are one or two changes this year in the method of publication. As before, only the examination numbers and not the names of students are given, but this year the students of each school are not grouped altogether, but are numbered according to the alphabetical order of all the names entered from the whole of Ireland. This will lessen to a minimum the possibility of being able to tell to what schools the most successful pupils belong. Again this year the marks obtained on the pass papers are not given in the official publication except for the preparatory grade. It would have saved much trouble to have given them, as all students like to know their marks, and application will be made in each individual case to the Intermediate Office for them.

DURING the vacation the Intermediate Board issued the programme for music, the chief feature of which is that a special fee of 10s. 6d. must be paid by each student entering for this subject. The Board has also shortened the prescribed book set for the pass course in French in the Junior Grade, limiting it to the first twenty chapters only of Jules Verne's "Le Tour du Monde."

TRINITY COLLEGE has added another to its many recent reforms by issuing new regulations for the sizarship examination. These will make the examination one for candidates entering direct from schools, as they must be under nineteen on the 1st June of the year in which they compete, and must not have matriculated in Trinity nor be graduates of any other university. The Board may, if it thinks fit, award independently one sizarship in mathematics and one in classics to Junior Freshmen. Sizarships will be offered for classics, mathematics, and experimental science (as well as for Hebrew and Irish, the courses for which are not changed). All candidates will be examined in English composition; for classical candidates there will be one paper in arithmetic and algebra and a *viva voce* examination in geometry, and for mathematical and science candidates an easy paper in Latin composition and a *viva voce* examination in a Greek and a Latin author of their own selection, it being permissible to substitute French or German for Greek. The main courses are entirely reorganised and very largely fit in with the senior grade courses of the Intermediate Board.

THE new Irish Reform Association, in the report which it has issued, declares itself of opinion "that a settlement of the question of higher education is urgently needed, and that the whole system of education in this country requires remodelling and co-ordinating." This is a matter to which the minds of moderate men in this country may well be directed, and if it is the intention of the Government to introduce a Bill next session for the co-ordination of Irish education, those interested especially in secondary education should be discussing the question this autumn, and should determine upon a policy likely to be at once acceptable and a genuine advance towards a fit and permanent solution. Attention has been called to one result of the reformed rules and programmes of the last three years, viz., the reduction of the number of schools receiving grants from 330 to 262. It may be that this is as it ought to be, but at the time that the Intermediate Board was established it was stated that the small classical school, which is now being crushed out of existence, was to be helped and supported.

WELSH.

THE Welsh National Eisteddfod has been held this year at Rhyl. The very important project of a National Library for Wales was discussed. The problem of the site was brought forward, and is the question which has now boldly to be faced. Sir John Williams, who has made such extremely generous gifts to the prospective National Library, expressed his interesting opinion that "the library should be placed where the student could pursue his researches undisturbed and undistracted and not in the large and noisy city." As to accessibility: "If a student must remain near the library for some time it matters little whether he travels thereto at the rate of ten miles an hour or at forty, or whether the place can be reached by one train a day or by a dozen. If the library were intended for the mere flitting sight-seer, 'accessibility' assumes far greater proportions. The great desideratum in respect to the seat of the library is not accessibility in the sense of rapid transit thereto and therefrom, but comfortable rooms and cheap living. A small town, with its quietude and cheap living, is therefore, as a home for the library, preferable to a large commercial town, with its noise and hurry, high rents, and expensive living."

AT the Eisteddfod Mr. William Jones, M.P., made eloquent reference to what he described as the most notable Welsh literary achievement of the year, the translation of Dante's Divine Comedy into Welsh by Mr. Daniel Rees, of Carnarvon, a task of great laboriousness, but one carried out with marked ability.

CARDIGANSHIRE COUNTY COUNCIL have now delegated to their Education Committee all powers under the Education Act of 1902, except that of raising a rate or borrowing money. They have decided to petition the King to appoint a Royal

Commission to inquire into the operation of the Education Act in Wales, and to petition that the Education Act, 1902, be amended to abolish all religious tests for teachers and to place all voluntary schools under complete local control. They also expressed approval by resolution of the principle embodied in the draft scheme for the constitution of the Welsh Education Council, and referred the consideration of the detailed scheme to the Education Committee for report.

A MOVEMENT in the direction of cultivation of nature-study during the summer holidays has been made by the holding of classes at Aberystwyth, under the charge of Mr. Pickard, the horticultural lecturer. It has been decided to form a Nature-study Association for West Wales, having for its objects the interchange of ideas on nature-study and the collection of specimens by members for mutual instruction. Mr. W. J. Lewis, of Pentrepoth County School, Carmarthen, was appointed honorary secretary and convener, and the first general meeting is to be held shortly at Carmarthen.

AT the Carmarthenshire Education Committee it has been decided to obtain counsel's opinion as to whether the intermediate schools, since they are vested in the Charity Commissioners, are liable to rates.

THE Glamorganshire Education Committee has resolved that where there are no pupil-teacher centres, or where the chief education official is of opinion that the centre is too small or inadequately equipped, that the highest grant would not be earned, and where there is a county school available, as a temporary measure the pupil teachers be sent at once to the county school, and that the chief education official be authorised to apply for recognition of such county schools as pupil-teacher centres.

AT a meeting of the Cardiff Provisional Education Committee the suggestion was made that in connection with technical lectures in future as many members of the committee as possible should attend the first lecture of the various classes to see how they are conducted. The suggestion was, however, met by a proposal that the Director of Education should present a report on the matter. The Cardiff Corporation are now taking over the collection of the ½d. rate for intermediate education, and will assume the duties and liabilities of the governing bodies of the intermediate schools in that town.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Contes et Légendes, 2e Partie. By H. A. Guerber. vi. + 180 pp. (Harrap.) 1*s.* 6*d.*—The author shows her wonted skill in selecting attractive tales from the most varied sources, and in telling them in simple language. To each tale she adds an interesting little note, giving the source and other details. A full vocabulary is given; but the author rightly says in the preface that "the most satisfactory results will be obtained by translating new words only when the pupils cannot guess their meaning, and by making them depend exclusively on their memory to translate all those already employed." The book is not quite free from misprints.

Les Aventures d'Ulyse. By G. G. Coulton. vii. + 144 pp. (Hachette.)—Mr. Coulton has taken Biraubé's translation of the Odyssey, and has dealt very freely with it, omitting difficult phrases or words, and many minor incidents, and he has taken the precaution of working through the book with pupils before publishing it. It is a pity the editors do not make a rule of this. Mr. Coulton hopes that the book "will be found suitable for reading aloud in French with a fairly advanced class, and that nothing need interrupt the flow of the narrative but necessary corrections of pronunciation or occasional pauses to ask the meaning of a more difficult word." We believe that he has fully attained his object. In an appendix are added some questions in French based on the text, and passages for retranslation. It is regrettable that the proof was not read more carefully; we have noted, for instance, *sil* (p. 1), *ôu* (p. 2), *qui* for *que* (p. 5), *aussitot* (p. 7), *temple* (p. 10), *lap dosu luce* for *la plus douce* (p. 14).

Advanced French Composition. By H. E. Berthon and C. T. Onions, M.A. xxxviii. + 106 pp. (Sonnenschein.) This is an excellent piece of work, and deserves a high place among the many books intended to teach that most difficult of arts, French composition. Very judicious are the introductory remarks, suggestive, but of course not exhaustive. The passages themselves are very well chosen; a considerable proportion are translations from the French, and we observe with pleasure that they are written in idiomatic English with few exceptions. ("The damp there is very great" seems quaint in a description of Venice; "a lifeless corpse" suggests killing one dead; and the impersonal "one" is used too frequently.) We are glad to see that there are no footnotes, and that a companion volume of fair copies, with full treatment of crucial points and variant renderings, will be obtainable for teachers.

Grillparzer, Der Traum ein Leben. Edited by E. S. Meyer. xxxiii. + 128 pp. (Heath.) 2*s.*—To our knowledge, this is the first English edition of Grillparzer's attractive and justly popular dream-play. Mr. Meyer gives a brief account of the Austrian dramatist's life and work, which is accurate on the whole. We may be asked whether it is true that *Sappho* "was translated into all the European languages," that "the predominance of the love element shows the influence of Corneille and Racine" and the statement that *Weh dem der lügt* "contains too much moralising and too little action" makes us doubt whether Mr. Meyer has ever read that delightful comedy. The text is nicely printed, and there are brief notes, which will prove sufficient for ordinary purposes. We are constrained to point out once again the distressing tendency to "tall writing" which is becoming increasingly evident in the editorial matter supplied by Transatlantic professors.

French Unseens. By S. E. Longland. (Rivingtons.) Two books: Senior, 62 pp., 8*d.*; Junior, 42 pp., 6*d.*—We can recommend these selections as being well compiled and suitable for their purpose; but we trust that teachers who take unseen translation in place of a set-book in the local examinations will regard these snippets as supplementary to the study of a connected text, and not as the exclusive reading matter of their pupils. Such misprints as are to be found should be removed in the next edition; we have noted *soitent* (i., p. 2), *qu'este-* (ii., p. 17), *château* (twice, ii., p. 20), *ne* for *me* (ii., p. 23), &c.

Villinger: Der Töpfer von Kandern. Edited by Walter Rippmann. (Arnold.) 1*s.* 3*d.*—The multiplication of short easy texts in modern languages is very desirable. It provides material for those teachers who think that the Reader should be the centre of their teaching, and that the pupil should be started on a Reader as soon as possible, and not kept at a long succession of dreary exercises. This little text of 37 pp. is edited with all Prof. Rippmann's usual care. There are exercises at the end in word formation and questions on the text to be answered in German. The glossary at the end has

most of its words explained in German, but the method is not ridden to death, and English is used where it saves the pupil's time.

Dent's New First French Book. (First part in phonetic transcript.) (Dent.) 6*d.* net.—Prof. Rippmann has followed the example of other recent First French Books, and issued the first twenty-three lessons of his New First French Book in phonetic transcript. The number of those who use the alphabet of the *Association Phonétique International* increases daily; these will be glad to have this book. It will also be a saving for the poor pupil to have to expend only sixpence at first instead of eighteenpence. Pupils—boys especially—are so ready to lose their books, and all will be glad to have a clean "New First French Book" after the drudgery of the first steps are past.

Goethe, Hermann und Dorothea. Edited by W. A. Acland, Ph.D. xii. + 189 pp. (Heath.) 2*s.* 6*d.*—There is no striking feature about this book to justify its appearance; we have sufficient editions of "Hermann und Dorothea" already. The introduction gives a very short account of Goethe's life, and some scanty remarks about the source and form of the poem. The text is none too carefully printed; the notes are quite commonplace; and there is a vocabulary, which seems altogether superfluous, for students sufficiently advanced to read a fairly difficult text may be expected to possess a dictionary.

A First English Book. By Walter Rippmann. (Dent.) 2*s.* net.—This little book on the lines of the now familiar Dent's First French and First German Books is intended for those children whose mother-tongue is not English. It should have a wide sale in Scandinavia, Germany, and among the large alien population of the United States. Those who wish to see the improvement that has taken place in modern-language books of recent years should compare this book with Hamburger's "English Lessons" in Alge's Series, published in 1898. It was on this series that the Dent books are modelled. One point of superiority is the great care with which these latter are got up; the printing, illustrations, and binding are all appropriate. The illustrations in this book all represent typical English scenes, and not Swiss or Austrian country. They are still somewhat agricultural, but then we are not all town-dwellers. The picture by Miss Roos on p. 85 is particularly artistic and charming. The first seventeen lessons are repeated at the end in phonetic transcript.

Classics.

Roman Literature. By Hermann Joachim. vi. + 151 pp. Temple Encyclopædic Primers. (Dent.) 1*s.* net.—This is quite a readable little book, in spite of its compressed character; but we doubt whether it will be useful except to students who know a good deal to begin with, and who can use it to refresh their memory and to summarise results. The story begins at the earliest period and goes down to the year 120 after Christ, with a glance at the provincial writers of a later date. Mr. Joachim has a fair sense of proportion, and a competent knowledge. We have to note, however, a lack of the power of generalisation sometimes which we do not expect in a Teuton. For instance: he speaks of the metre of Plautus as if its many "shortenings of long words" and other irregularities were arbitrary; whereas we know that these depended on the subservience of the metre to the spoken word-accent and phrase-accent. In fact, the principle which formed the Saturnian, and lived in popular Latin poetry continuously until it recovered the mastery in the middle ages, was the main principle of Plautine scansion. Plautus grafted the Greek metrical schemes upon it, but where the two came into conflict the Greek went to the wall. The translation is satisfactorily written, but does not eschew the split infinitive.

Studies on Hesiod, with a view to elucidate his reasoning. No. II. The Shield of Hercules. By W. F. Cornish. 32 pp. (Frowde.) 1*s.*—This pamphlet, written by a "clerk in Holy Orders," bears evidence of its origin. Mr. Cornish is a moralist, and seeks allegorical meanings in his poet. Thus Cygnus is put here "to represent that older state of things which so often, because of the abuses which grow up under it, gets to be intolerable." The fact that Iolaus is the charioteer of Hercules shows that "those qualities, too, which seem more of earth, if rightly directed, have their part also given them, that they too may be made conducive to heaven's purpose." Mr. Cornish sees the fall of man in the fable of Amphitryon, and spiritual weapons in the whole armour of Hercules. We hope we are mistaken, but he appears to connect the word χλοῦνις with "clown" (p. 12). But enough has been said to show that the pamphlet cannot be taken seriously.

A Source Book of Roman History. By D. C. Munro. viii. + 258 pp. (Heath.) 5*s.*—The material of this book is classified under twelve headings, partly chronological, partly of different subjects, such as Religion, the Army, Early History, Roman Life and Society, Provinces. Each chapter has a select bibliography at the beginning. The extracts are presented in English, and are taken from standard books or translations whenever that is possible. They are well selected and interesting. If the earlier ones are scrappy, that is hardly to be avoided. But there is one great fault in the form, and a fault which could easily have been avoided: the dots which indicate omissions. These offend the eye and distract the mind even within the extract; but why some should have dots at the beginning, and others at the end as well, we cannot understand. The book is, however, a praiseworthy effort, and ought to make it possible for beginners to learn something of the methods of criticism.

The Phaedo of Plato. With Introduction and Notes by Harold Williamson. xxxix. + 251 pp. (Macmillan.) 3*s.* 6*d.*—A school edition of the *Phaedo* will probably be welcomed in many quarters, although it is to be doubted whether better results may not be attained by a good teacher with a plain text. Such, at least, is our own experience. But those who want notes will find their want supplied by Mr. Williamson. The editor has followed Mr. Archer-Hind in the interpretation of his philosophy, and has taken over that scholar's summary bodily; he has little to say, and need say little of textual criticism; his efforts are confined to elucidating the Greek. Here he is very fairly successful; but he has not learnt ὅσῳ πλέον ἥμισυ παντός. The notes are overloaded with matter, often irrelevant, as in the long discussion of οὐ μή, p. 128 (which contains a mistranslation, μὴ δὴ νῆας ἕλωσι, by "may they not seize the ships"), which is not clear, not always reasonable, and certainly not in place; ὑπερφυῶς ὡς (p. 127) and others. The note on ὁτὲ μὲν (p. 110) is misleading; the word has not a relative but a demonstrative sense, as a student of Homer ought to know. The old figment that a cock was specially appropriate to Asclepios is revived (p. 245). On the whole, we are disappointed with the book. It is ill-digested, and shows that the author has learning but does not know how to turn it to the best use.

Edited Books.

Selected Poems. By H. B. Cotterill, lvi. + 55 pp. (Macmillan.) 1*s.*—The poems included in this booklet are well known and do not appear to have been chosen for any other reason than that they are subjects set for 1905 by the Intermediate Education Board for Ireland. But to treat this collection as merely an examination text-book would be a mistake. We have before now expressed our admiration of the scholarship which Mr.

Cotterill expends on his editions. This, even the least of these, is worth reading, even by a literary man, and the present reviewer has felt compelled to go through every word of the introductory sections, for Mr. Cotterill once again has written so delightfully that all thought of examination slips from the mind. The notes are excellent, but it is the introductory lives of Gray, Burns, Cowper, Moore and Longfellow (who are the "selected" poets) that deserve special attention. They are models of what biographical introductions ought to be.

The Pentateuch. Vol. II. By Rev. H. C. Batterbury. xi. + 298 pp. (Rivingtons.) 2*s.* 6*d.* net.—This second volume of Mr. Batterbury's is concerned with portions of the Books of Exodus, Leviticus, Numbers and Deuteronomy; and of these the last, which is by far the most interesting (after Exodus), gets the least space and none too much attention. The plan that is followed is by this time familiar to all who have used the previous volumes of this most serviceable series with the care which they merit; and for the notes, maps, diagrams and illustrations, there can be nothing but praise—if we remember in the case of the notes and allow for the ecclesiastical view which governs the whole series. Mr. Batterbury is evidently afraid of modern criticism, and while he presents in the case of each book a fair summary of its theories, he urges teachers, as they have little time, he says, for testing criticism of this kind, to maintain the traditional view of "inspired" Scriptures; since he alleges disagreements among the critics themselves, and every probability of present-day conclusions being overturned at no distant date. There may be some wisdom in his counsel; but in view of certain well-established conclusions, and especially in the light of two manly school-books on Old Testament history which recently we reviewed in these columns, it does not commend itself for either strength or candour.

The Merchant of Venice. By R. M'William. xxxi. + Text + xxxii. pp. (Dent.) 1*s.* 4*d.*—We are compelled to suppose that some well-considered reason dictates the omission of any numbers from the pages of the texts in this otherwise admirable series. The method of dealing with Shakespeare's characteristic peculiarities of language is perhaps a little too condensed; although, as this play only is drawn upon to illustrate them, possibly they will serve a useful school purpose. But the presence of sections like these ought not to induce either teachers or taught to neglect a book like Dr. Abbott's on Shakespearean grammar. The section on versification is brief to a fault. The notes are splendid, and are decorated with many interesting woodcuts, drawn from antiquarian sources, and some well deserved praise must be given to Miss Dora Curtis for the illustrations.

Cambrensia. By W. Jenkyn Thomas. 248 pp. (Edward Arnold.) 1*s.* 6*d.* net.—This is an ideal reading-book and ought to be commended as a model to all and sundry who contemplate the production of such works, or have laid to heart the remarks of Mr. Burrell in the September issue of this journal. It is intended primarily for Welsh schools, but ought not, on account of its subject-matter, to be unacceptable anywhere in the United Kingdom, for its variety, its tactful arrangement, its immense range of selections and its exquisite illustrations, can only serve to make the reading of it a delight. It is said to be intended to serve the needs of the higher standards in elementary and the lower standards in secondary schools, but it makes remarkably good reading for many who have long left school days behind them. It is delightful in a book of this kind to come upon Tacitus, Gildas, Nennius, Asser and Giraldus Cambrensis, side by side with George Borrow, Thomas Love Peacock and Lady Charlotte Guest; to say nothing of Froissart and the much-neglected Lord Clarendon.

English.

Commercial Correspondence and Postal Information L. Altmaier. xiv. + 204 pp. (Macmillan.) 3*s.* 6*d.* n is a useful treatise, considering the end that it has in v we are sorry to see it wounded in the house of its frie English of the general editor is to be taken as a result ing in commercial correspondence. Business Engl largely a thing of conventions and abbreviations, as t writer knows it, that it is time something should be d possible to make it more instead of less literary; a afraid that the advice of Mr. Altmaier will not great the former result, though its practical value is indubi his directions are for the most part clearly and well The book is worth attention wherever a commercial education is pursued; and the amount of information in it, and its numerous exercises, are certainly dire practical and laudable object. But the general ec Herrick, also takes upon himself to give advice as t correspondence. After perpetrating this sentence, "' subject of a letter *was* likely to be foreign to the str perience, information *is* furnished him," &c., we get canese locution, "will likely find." Then comes the "practice the omission of all unnecessary words." Herrick himself does by sheer slaughter of the arti following barbarous sentences will show: "The e value of careful study of letter writing cannot fail tc . . . Foreigners may properly resent being punish of ignorance or neglect of Americans . . . If so able time of a man, valuable in business, would be s this is the outcome of commercial correspondence it w for a long time, a sorrow and grief of heart to English undefiled, in spite of the manifold excellen book.

History.

Heroes of Industry. By F. E. Cooke. viii. + (Routledge.) 1*s.* 6*d.*—This is a brightly-written illustrated school reader, containing the stories of Wa Stephenson, Nasmyth, Telford, Wedgwood, Crom the brothers Chambers interspersed with poems Mackay and others, and followed by "a few notes and meanings." There is more humanity in the the engineers than in the corresponding "lives" Smiles.

Classified Catalogue of Books on English History. This is a list compiled by Mr. A. Neave Brayshaw of the scholars of Bootham School, York. Appa intended to serve as a guide to an excellent histor which the school is fortunate enough to possess. are classified under the headings of successive English history, the periods being mainly those Gardiner and Mullinger in their "Introduction to t English History." Not only are standard historical given, but a small selection of first-rate novels is add who are studying any particular era of English have exhausted the limited information of their would find this little catalogue an excellent guide reading.

A Historical Geography of the British Empire. George. xi. + 312 pp. (Methuen.) 3*s.* 6*d.*—M "object in writing this little book has been to prese survey of the British Empire as a whole, with th conditions, at least so far as they depend on geogr have contributed to produce the present state of thi quotation from the preface exactly describes the rather a geographical history than a historical

is divided into eight parts, an introduction, a summary, e British Islands, the "Stepping Stones," the Daughter ations, the Dependencies, the Protectorates, and the Do-inions in Africa. There is an index, but only one map, r the book was intended to accompany an atlas, and the uthor says there are plenty of atlases, and maps would have ntirely changed the character of his book. Mr. George's ame is a guarantee of good work, and we can heartily ommend this book to our readers as suitable for the school ibrary or even as a supplementary text-book.

Science and Technology.

A Primer of Physiology. By E. H. Starling. viii. + 128 pp. (Murray.) 1*s.*—We doubt if in any other subject of science here are so many really admirable primers as in human physiology. This is certainly one of the best we have seen. Comparatively few technical terms are used, yet, by assuming on the part of the reader an elementary knowledge of physics and chemistry, the author has been able to introduce much interesting matter which is usually restricted to more ambitious books. The little volume may be confidently recommended as a trustworthy introduction to present-day physiology.

Trees. Vol. I., Buds and Twigs. By H. Marshall Ward. i. + 271 pp. (Cambridge University Press.) 4*s.* 6*d.* net.—This is the first of a series of six volumes intended to provide tudents of forest botany with a guide to trees and shrubs from he point of view of the outdoor naturalist. Those who know he author's delightful book on "The Oak" will have high expecations of the present work, and they will not be disappointed. his first volume consists of two parts: a general account of uds and twigs and their manner of growth, followed by a special ection describing the characters by which the buds and twigs of arious trees may be recognised. It contains 136 excellent lustrations. There are few more interesting and instructive xercises in field botany than the elucidation of a twig's past istory from the marks on its surface: this is only one of many ee riddles which Prof. Ward's book will help the student o solve. We shall await with keen interest the appearance of he succeeding volumes, which will deal respectively with eaves, Inflorescence and Flowers, Fruits and Seeds, Seedlings, nd the Habit and Conformation of the Tree.

Physiography: an Introduction to the Study of Nature. By . H. Huxley. Revised and partly re-written by R. A. Gregory. . + 423 pp. (Macmillan.) 4*s.* 6*d.*—To bring Huxley's "Physiography" up to date, curtailing or altering here, amplifying there as the progress of science had rendered necessary—without ther disturbing the plan of the book or sacrificing any of its harm of style, was an undertaking which only the most unualified success could justify. Prof. Gregory has done all is and more. So complete is the fusion between new and old aterial, that, although the additions in some cases extend several pages, the joint authorship is only revealed by a ect comparison of this with former editions, or by the knowlge that certain facts described are of recent discovery. A newhat important modification of the manner of developing "argument" should be mentioned. The original volume, will be remembered, was based upon a course of lectures on Thames and its basin. In the present edition the text has n made equally applicable to any river basin: a change ich will much increase the usefulness of the book in schools remote from the Thames. The work has been greatly proved in other respects also. It contains 300 delightful wings and photographs, excellently reproduced and nearly all ; and the use of headings in thick type increases the ease of reference to a degree which is only apparent in comparing the new and old editions. Prof. Gregory's work will be cordially welcomed, not only as a notable addition to educational literature, but also as a worthy tribute to the memory of a great man. We are glad to learn from the preface that a course of practical exercises in observation and measurement, based upon the facts described in this volume, will shortly be published.

Eton Nature-Study and Observational Lessons. Part II. By M. D. Hill and W. M. Webb. xvi. + 174 pp. (Duckworth.) 3*s.* 6*d.* net.—The second part of this very attractive work follows the same plan as that adopted in the previous volume noticed in our issue for February, 1903. The consequence is that the observational lessons are apt to convey the impression of forming a collection of odds and ends of information and directions as to what to observe. If nature-study is to be a satisfactory introduction to the study of science, it must be of a kind to inculcate orderly and systematic habits of work. There is a danger that the plan adopted by these authors will have a contrary effect and encourage a disposition—natural enough in children—to dabble in many subjects and to concentrate upon none. But if the book before us is used only by trained and intelligent teachers, it should prove of very real service in supplying just those practical hints the instructor who is not a specialist requires. The illustrations are excellent and the notes good.

Biology as a Factor in the Teaching of Morals. By W. Hoskyns-Abrahall. 28 pp. (Bristol: Dove Bros.) 4*d.*—This brochure is a reprint of a paper read at a meeting of the Women's Section (Educational) of the Bradford Exhibition. It is an interesting account of a scheme of teaching carried out by the writer in the course of some years' work at the head of a small school for girls, the object being to impart to the pupils, through the medium of biology, certain information relating to themselves and the laws of life. The result was that there was "no case in which the nobler part of a girl's nature did not respond to this teaching in the most pure, simple and reverent way." The paper, which confirms the experience of many other teachers, is an earnest contribution to the solution of an important problem in education.

The "Junior Local" Practical Physics for Beginners and Junior Students. By the Rev. J. F. Tristram. xii. + 91 pp. (Dent.) 1*s.* 6*d.*—The experiments in this little book are well known to all teachers of practical physics. There seems little to distinguish this one from several previous volumes intended for first-year students. The illustrations might be improved. Teachers will find the book contains enough practical work for a year's course.

First Stage Steam. J. W. Hayward. 230 pp. (University Tutorial Press.) 2*s.*—This little book has been designed to cover the requirements of the Board of Education, and closely follows the syllabus for the first stage examination in steam. Evidently the limited size of the book has prevented adequate explanations and diagrams being given in many cases. Thus nine pages only are devoted to the chapter on modern stationary engines, with consequent unsatisfactory results. In spite of its defects in this direction, young candidates will find the book helpful for their examination work.

Inorganic Qualitative Analysis Tables. By H. M. Timpany. 56 pp. (Blackwood.) 1*s.*—This small laboratory guide contains, in addition to the usual tables for the separation of metals by the wet method, a section on the simpler dry tests and on the tests for acids; also, a number of notes and equations are inserted at the end of the volume. We notice that the student

is instructed to test for a phosphate after the removal of Group II., but no table is given for the separation of subsequent groups *in the presence of a phosphate*; in fact, the tables, as they are here drawn up, assume the absence of phosphates. We cannot recommend the book in its present form.

Magnetism and its Elementary Measurement. By W. Hibbert. 96 pp. (Longmans.) 2*s*.—This book is the first part of a larger volume, dealing with magnetism and electricity. It would seem that the author's chief aim is to emphasise the importance of quantitative measurement of magnetic phenomena, even in the case of beginners; and, for this purpose, the author describes a new piece of apparatus, termed a "magnetic balance," which is made use of in many of the experiments described in the text. The "balance" is simple in design, but appears to be quite capable of fulfilling the purpose for which it is intended. The volume includes an introduction to general principles, and chapters on the measurement of magnet poles, magnetic fields, and the magnetic circuit. Although the amount of theoretical matter contained in the volume is very limited, we feel sure that the experiments will be highly instructive to the elementary student.

Messrs. Asher & Co., 13, Bedford Street, Covent Garden, have sent us a copy of No. 4 of Schröder and Kull's *Biological Wall-Diagrams*. It contains excellent illustrations in colour of several species of frogs and toads, with the life history of the common and edible frogs. The pictures are very life-like and distinct, and will be of great help in teaching the elementary natural history of the animals they portray.

We have received from Messrs Gallenkamp & Co., 19 and 21, Sun Street, Finsbury Square, a copy of their "*B*" *Price List*, which deals with botanical apparatus. Among its special features may be mentioned apparatus for performing the experiments described in Detmer's well-known "Practical Plant Physiology," collections of the wood, bark, and leaves of common forest trees, botanical paper and presses for drying plants, slide-cabinets, &c. Teachers of botany would do well to procure a copy.

We have examined the following new pieces of apparatus submitted by Mr. Thomas Laurie, of Paternoster Row, London:—

Double Leaf Electroscope. Devised by Dr. R. H. Jude, of Rutherford College, Newcastle-on-Tyne.—The special feature of the instrument is that the leaves are surrounded by a coarse wire netting. The gold leaves are in electric connexion with one pair of binding screws, and the wire netting with another. The netting is soldered to a metal plate in metallic connexion with a second metal plate on which the electroscope stands. In this way the electric potential of the netting is maintained at zero, and the divergence of the leaves can be used as an indication of the potential of any charged conductor joined to the binding screws connected with the leaves. The cost of the instrument is 17s. 6d. The electroscope will prove useful on the lecture table, though in the laboratory the student may with advantage use an instrument of his own make.

Single Leaf Electroscope. Invented by Dr. R. H. Jude.—The base and sides of this convenient instrument are of wood with glass front and back. The top is of ebonite with three ebonite supports for brass rods, insulated from one another. Two broad copper plates are attached by vertical brass rods to the insulated metal rods, and are capable of sliding along them, a slot being made in the ebonite top for this purpose. A third vertical brass rod terminates in a metal knob, passes through the middle ebonite support, and its lower end terminates in a single gold leaf. This form of instrument costs £1 10*s*., and should be of service to lecturers on electrostatics, as providing a simple means of determining which of two charged conductors is of the higher potential.

Jude's Galvonometer.—This instrument is wound with two coils of wire, one of high and the other of low resistance, and by simply turning a switch either of these coils may be thrown into circuit as desired. It thus comprises two instruments in one. To the needle is attached a pointer which moves vertically in front of a graduated scale, and can thus be easily seen by a class. The instrument costs £1, and teachers will find it very convenient.

The Theory of Heat. By Thomas Preston. Second Edition, revised by J. Rogerson Cotter. xviii. + 838 pp. (Macmillan.) 18*s*. net.—The treatises on Light and on Heat, by the late Prof. Thomas Preston, are now regarded as classics in our literature on these special branches of physical science. Much important work in the subject of heat has been carried out since the publication of the first edition in 1892, and the gratitude of students is due to the publishers for issuing this revised edition in which all recent work is now included. Mr. Cotter, to whom the work of revision has been entrusted, states in his preface that the position of the section on the dynamical equivalent of heat has been altered in order to bring it into closer connection with the articles treating of the specific heat of water, and that some marginal notes by Prof. Preston have been included in the text. The new matter, which extends to about 100 pages, includes the following subjects: Thermo-electric thermometers and low temperature thermometry, Tutton's modification of Fizeau's apparatus for determining the expansion of crystals, Reynolds and Moorby's determination of Joule's equivalent, and the electrical methods adopted by Griffiths and by Schuster and Gannon for the same determination; liquefaction of gases, vapour pressure at a curved surface, distribution of energy in the spectrum, the measurement of temperature by radiation, and other important items. The new matter is treated in a manner which does great credit to Mr. Cotter, and we may well say that his excellent revision will maintain the high reputation of the first edition.

Mathematics.

Elementary Pure Geometry. With Mensuration. By E. Budden. viii. + 284 pp. (Chambers.) 3*s*.—It is far from easy to characterise this book in the limits of a short notice. In addition to the practical work in drawing and measurements to be found in most recent books, this volume contains not merely the substance of Euclid, Books I.-VI, and XI., but also the essentials of plane trigonometry up to the solution of triangles, a considerable part of higher modern geometry, and a fairly complete treatment of geometrical conics. It is inevitable that a considerable amount of compression must be applied to include such a wide range of material within a compass of 284 pages, but in spite of compression there is usually no lack of clearness. The book has a distinct character of its own, and thoroughly merits the careful consideration of all interested in the teaching of geometry; it is very decidedly the most philosophical of recent books, and, though we by no means agree with all the positions taken up by the author, we are glad to see that the feeling for rigorous proof is again asserting itself.

Advanced Course in Algebra. By Webster Wells. viii. + 581 pp. (Heath.) 6*s*. 6*d*.—The book opens with a careful yet simple discussion of the laws of operation, based to a considerable extent on Fine's too little known work, "The Number System of Algebra." The effort shown in the opening chapters

e a logical basis for the development of the subject is
ed all through the book, and though the author's
not uniform, yet a high standard is usually attained,
ome important sections the treatment is excellent.
the best work is show in the discussion of equations.
roduction to that discussion a statement is given of the
f limits which is admirably clear and well within the
comparatively immature pupils. This innovation is
ly justified, and it is to be hoped that this good
may be followed by English authors. The range of
is practically the same as that of higher algebras in
se, including, as it does, chapters on determinants and
y of equations. An appendix contains Cauchy's proof
istence of a root of an algebraic equation; but that
ıot free from difficulties, which might have been more
discussed. The book is provided with numerous exer-
a very easy kind; the copy sent for review has no
though the heading "Answers" appears in the contents.
would be a decided improvement.

inary Practical Mathematics. By S. G. Starling and
ırke. viii. + 168 pp. (Arnold.) 1*s.* 6*d.*—This little
been written for beginners, and seems to be very well
or the class of pupils whom the authors have in view.
lanations are clearly stated, and the illustrative ex-
ill appeal to the pupil. The treatment of logarithms
ly simple. Altogether the book is well suited either
ntary technical classes or for private study.

ns of the Examples in Hall's Graphical Algebra. By
all, assisted by H. C. Beaven. 59 pp. (Macmillan.)
To teachers for whom graphical work is of the nature of
these solutions will be of great service. The diagrams
sarily on a somewhat small scale, but they are sufficient
ıs a guide. We should have liked to see, in the prac-
lications, the law obtained from the graph tested by
on of the values given by experiment; in practice this
ould always be applied.

its of Plane Surveying (including Levelling). By
Marx Barton. viii. + 255 pp. (Heath.) 6*s.*—This
esigned as a first course, and it seems well adapted for
of beginners. The descriptions of instruments and
of work are so simple that even those who have not
ıtage of an instructor should be able to gain a sound
ge of the general principles underlying the operations,
rain themselves for ordinary surveying. As a good
ion to American practice the book should take an
lace. The tables are very full; in some respects they
us to go beyond what the readers of the book

Miscellaneous.

*School Government" Edition and Manual of the Code
Elementary Schools*, 1904-1905. Compiled by official
nd edited by Herbert Cornish. xviii. sections paged
. (Office of the *School Government Chronicle.*) 1*s.*
complete change in character of the "Code" for
y schools this year has necessitated a corresponding
in the arrangement of this very useful annual. We
esitation in saying that no school manager, no school
dent, no head-teacher, can afford to be without a copy
nual. The editor is to be congratulated upon having
to maintain the high order of excellence associated
yearly publication.

Days at Uppingham under Edward Thring. By an
x. + 163 pp. (Macmillan.) 3*s.* 6*d.* net.—Old Boys'
memories are generally good reading, and so are these. There is no particular order or system in the memories, and none was to be expected; but, apart from the interest which attaches to any part of a great man's story, the individuality of schools in the old days was so great that a mere recital of tricks and manners suffices to hold the reader's attention. The Old Boy can talk of the earliest days of Thring's rule, but he has a few legends from days earlier still. The half-yearly ceremony of banging the old oak bedsteads, for instance, when these monstrous four-posters, made to hold three boys at a time, were all raised and dropt at one signal with a noise "like thunder." The old amusements, the old lessons, the old punishments—all have a quaint charm as of news from another world. Thring's father riding on horseback from home, accompanied by a mounted servant, to visit his son, takes us back to a day which every year the motor cars make us more deeply regret; a day of leisure and quiet, of honest manliness and good feeling, when one man's pleasure did not mean another's discomfort, and the sportsmanlike spirit was common in every rank of life. The Old Boy does not individualise his schoolfellows, which is odd, although he gives anecdotes about some of them; but his sketches of Old Folk at Uppingham are very taking. Old Joe White, the typical village blacksmith; Mr. Dean, the seedsman—tall hat and swallowtail coat; "Magnum Bonum," the fruit-hawker, with his catskin waistcoat; poor Mad Fanny, as usual the butt of the village boys; Bob and Charlie Knight, the Falcon post-boys; last, and most remarkable, poor Tom Bradley, the vagrom man, who collected rags and bones, and had studied mathematics and astronomy. All these make a striking gallery. They might indeed have been paralleled from most country villages in those days, but with very little repetition, for in truth there was character in the old world. The Old Boy does not disguise his regret at the change which has made the world educated and dull. Of the masters he has little to say, but a few are sketched; and there are hints enough of Thring to show the strong influence which he wielded over his pupils. Other Old Boys, and not of Uppingham only, will be glad to possess this book; and we hope some of them will follow this Old Boy's example.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Experiments in Dynamics.

MR. W. C. FLETCHER'S article on the teaching of dynamics in your May issue is of the utmost importance to teachers. The method of measuring acceleration by the wave curve traced by a tuning-fork on a fly-wheel is familiar to many students of physics; but Mr. Fletcher's trolley, steel spring and paint-brush are so simple and easy to adjust that they ought to be found in every respectable mathematical class-room. They should not be relegated to the physics laboratory in these days when the graph has arrived from the never-never land of analytical conics.

In using Mr. Fletcher's method with a home-made trolley, I found that it was difficult to estimate the exact force necessary to overcome friction. I found it necessary to test the uniformity of the velocity by careful measurement of wave-lengths.

I have lately been trying the trolley on an inclined plane,

and I find that it is capable of giving a satisfactory verification of Newton's law, "The acceleration is proportional to the force." It is not easy to measure the inclination of the plane with accuracy, so I have contented myself with measuring the effective force down the plane by attaching a scale-pan to the trolley by a piece of fishing line passing over a smoothly running pulley at the top of the plane, and adjusting weights until the trolley, when started, ran down the plane with perfectly uniform velocity. The friction of the pulley being neglected, the scale-pan and weights gave the effective force down the plane, no matter what the friction of the trolley wheels were. The scale pan was then detached, and the trolley allowed to run down freely under this same force, the acceleration being measured as before.

The plane was then tilted to a different angle, and the force and the acceleration again measured. It was found that the ratio of the two accelerations and the ratio of the two forces agreed fairly closely, an accuracy of one per cent. being easily attainable. Owing to the friction of the trolley wheels, this ratio differed from the ratio of the two gradients.

Stevinus showed that the force necessary to support a body on an inclined plane was proportional to the gradient. Galileo defined uniformly accelerated motion, assumed that a constant force caused a constant acceleration, and showed experimentally that the acceleration down a plane was proportional to the gradient. I have not been able to find in Galileo's dialogues a direct statement that the acceleration is proportional to the force, nor have I found that he made any attempt to obtain the value of g from his observations with the inclined plane.

I cannot find any record of early determinations of g. Did Newton in his early work use the value obtained by Galileo at Pisa? When did he first employ the formula of the simple pendulum for this purpose? Perhaps some of your readers can inform me.

Eton. W. D. EGGAR.

Discipline in the Laboratory.

MAY we hope that the subject introduced by "Science Master" in your September issue will be well discussed in these columns? In particular, may I ask a few more questions with regard to talking and working in pairs?

I hardly see how laboratory work can be done without talking as a general rule. Boys teach each other a great many little details, where to find things and where to put them away, and the partnerships save innumerable unnecessary questions from coming up to the master.

Does talking tend to interfere with prompt attention? The talking ought to stop the moment the master's voice is heard raised above the rest. Is it sometimes desirable to stand the class out to one side of the room, away from their experiments, in order to emphasise important explanations, or when mistakes are being made?

Is it sufficient to call up one boy from each pair to the master's desk, and give these directions to be passed on to the rest of the class, or does this only save time at the moment by leaving half the class untaught?

What is the right standard of quiet talking? Such that no individual voice predominates, or such that the master's voice can easily rise above all the others?

Does conversation need limiting to the work in hand? And is this effectually done by leaving conversation between partners alone, but restricting conversation across the table or away from place?

Are boys set to work in pairs because it is best for their work, diffusing knowledge and enthusiasm, and teaching co-operation? Or is it because laboratories are so small, and two boys can work together on seven feet of bench, whilst singly they would require five feet each? Or is it because classes are so large, and by arranging 24 boys in pairs one only has to deal with 12 units, distributing 12 pipettes, checking the readings of 12 burettes and examining 12 papers?

Does the practice of working in pairs sometimes lead a slack boy to become an undetected idler? What is the best way of making sure that each partner does his best?

I suppose the discipline of a laboratory depends upon the boys having plenty of definite work to do, and on the master knowing whether they do it. Now, how should definite work be exacted from each of two boys working together? If written answers are expected, may one partner act as secretary, taking notes for both? Need the other partner, who has done all the weighing, show full notes? Or should both partners show up fair copy? If such copies are verbally identical, should both partners take equal marks? Or should a correcting factor be held in reserve for those who seem to do less than an equal share of work?

A new boy working with a partner learns to do all sorts of little manipulations, but learns them all according to the more slipshod standard of his schoolfellow, instead of by the more stringent standard of his master.

Is it, then, a good plan to provide some occasional manipulation drill with lower classes, just to make sure that every boy can do little things well? Suppose superfluous boys are asked to stand along the wall and watch, whilst the others are asked to light Bunsen flames, and then flames blue, flames yellow, flames blue but silent, flames roaring, gas off; water taps on, taps full on, taps half on, taps dripping, taps off; test-tube racks, tubes on pegs, tubes in holes, one tube half full of water, boil the tube. This test-tube drill may not be science, but in moderation younger classes like it, it has a wonderful way of smartening them up, and is a very effectual way of imparting little habits of good work, for only one thing is done at a time, and that under keen inspection.

Does the habit of talking in term time lead to thoughtless speaking in examination without any intention of offending against rules? How can boys be examined at all if any speaking is permitted, and how can they be protected against their own mistakes when all speaking is forbidden? Even when specially cautioned not to speak, even if his neighbour's apparatus has exploded, or his own is just going to explode, I find that perhaps one boy in a dozen speaks in his first practical examination. Ought his papers to be accepted in whole or in part? Is it right to let him go without any imposition?

Does it ever happen in upper classes that boys who have worked successfully through the term in pairs, break down in examination on quite simple details, such as adding weights, burette reading or measuring with a pipette? Does this suggest that division of labour risks division of learning?

Does the general plan of working in pairs require occasional variation in preparation for examination? For instance, help may be gradually withdrawn, one day books are kept closed, the next the master refuses to give any help, next day the partnerships are dissolved, and the boys are asked to try how far they can manage without talking. I once found the working of such a practice examination so satisfactory that the marks were accepted as part of the examination marks.

Do boys in pairs tend to hinder each other by talking, and also to hinder the master's inspection during the last few minutes of class when work is over and apparatus is being cleaned and put away? Can I do better than ask the senior partner to dismiss his junior when satisfied with him, but to wait himself for my own inspection? HUGH RICHARDSON.

Bootham School, York,
September 8th.

rve absolute silence in a laboratory may be the mark
preferably strict) disciplinarian, but it is hardly that
teacher. To impose absolute silence may perhaps
rork of the teacher easier, though that is doubtful; it
not so likely to secure the best results for the boys
e direction of character formation or of acquirement
ge.
ie's own laboratory experience it is easily seen how
needlessly to restrict the boys either in freedom of
novement.
junior classes, which, in some cases, number as many
nd where the boys work in pairs, it is my custom to
who work together to talk to each other. In such
ere the work is elementary, freedom of movement is
d to any great extent; but, in senior classes, where
s are fewer and the work is more advanced, liberty
out the laboratory, to consult books on the laboratory
terchange ideas with each other, seems to me abso-
ıtial.
r, if a teacher is to pay proper attention to the work
should say that it would be almost impossible to
olute silence in a large laboratory class. It could be
ırse, quite easily, but the work would suffer.
a good thing to let the boys learn as soon as possible
re responsible beings entrusted with the carrying out
piece of work, which is to be done as accurately as
ıd in a reasonable time. Some boys will perhaps
trust reposed in them, but the great majority will
eager to show the trust is deserved. Such, at any
experience.
re girls, as well as boys, in a few of my laboratory
t the foregoing remarks apply equally well to

pinion, absolute silence in a laboratory would be the
weak rather than a strong disciplinarian; weak in
:acher was unable to trust his boys to talk in a
manner without allowing them to get out of

r, like "Science Master," I should be glad to know
ıtory work is conducted in other schools. I know
who carry out their work on these lines, and, so far,
have had many visits from inspectors, no remarks
made to me personally or in the reports on the com-
:edom allowed in the laboratory. W. A.
ber 14th.

acher of large laboratory classes, my experience coin-
that of "Science Master" in regard to laboratory
To maintain silence during practical work may look
to the casual observer and the inspector, but every
ll agree that it deadens interest and is irksome alike
and pupils. Quiet conversation is both healthy and
; and a fairly long experience has proved that good
is not impaired thereby. There can be no question
nce Master" has adopted the right method, and one
ad to the best results. I trust that for the sake of his
vill continue to pursue his present policy. B. T.
ham,
t. 10th.

The Girls' School Music Union.

able article appeared in the September number of
IOL WORLD describing the conditions that prevail with
nusical education in our public schools for boys. The
nts to the progress made within the last fifty years,
dignified and important position that music itself now
the world of school, and, secondly, in the intelligent
tened manner in which that art is taught and learnt.

May I say a few words on the subject of music as taught in our secondary schools for girls?

In the first place, it cannot, I think, be questioned that girls have in general more time to devote to music, and that far greater facilities are afforded to them for practising, than is the case with their brothers. It follows, therefore, that the responsibility of their teachers is greater, and the results should be in proportion. The average girl spends an hour every day for nine months out of ten years of her life in practising. Is the result of all this labour satisfactory? Does such a girl on leaving school know anything of music beyond the pieces in her *répertoire?* Supposing she "drops" her music on "coming out," that her talent and enthusiasm are not great enough to survive the change of life, the free disposal of her own leisure, the absence of constraint and of the time-table, what remains? How much scientific knowledge of music? How much capacity to enjoy? how much critical perception? What foundations of taste? Can she distinguish the worth of a composition apart from the glamour thrown over its performance by some favourite or fashionable artiste? Can she read music? Is her ear developed? Her sense of rhythm? Having ceased to perform herself, can she bring some of the same intelligent pleasure to listening to the performance of others as she can to visiting pictures in a gallery or masterpieces of architecture? In short, has her musical education been up to the same high standard as that which she has received in other subjects at school?

Dr. Pole, in his introduction to the "Philosophy of Music," written twenty-five years ago, says: "The great mass of musical teaching and learning that goes on, has performance in view, and nothing more." Is this state of things improved?

I do not attempt to answer these questions, nor to dwell on the enormous practical importance that women's influence in the musical world might assume, the control they could exercise over the programmes of concerts given in their own country districts, or even over the music in their churches; the general purification of the demand that creates the supply, which they might bring about.

In order to discuss these questions, and to arrive at some practical conclusions, a Union has been formed called the "Girls' School Music Union," under the presidency of Lady Mary Lygon. A strong and influential committee has been brought together, consisting of such eminent musicians as Sir Hubert Parry, Dr. Cummings, Dr. Arthur Somervell, Dr. Harford Lloyd, Dr. Eaton Faning, Dr. P. C. Buck, Mr. Oscar Beringer, Dr. Annie Patterson, Madame Amina Goodwin, Miss Fanny Davies, and Miss Lucy Broadwood; and many principals of important schools such as Mrs. Woodhouse, Miss Strong, Miss Gavin, Miss Home, Miss Gurney, Miss Weisse, and Miss Bartlett. The first general meeting and conference were held on May 28th, at the Baker Street High School, by kind invitation of Miss Strong. It was largely attended, and the discussions were active. Interesting papers were read by Mr. Arthur Peppin on "Ideals of Music Teaching," by Dr. Basil Johnson on "School Orchestras," by Dr. Somervell on "A Plea for the more Educational Treatment of Music," and by Mr. Algernon Rose on "Examinations."

The next conference is to be held on Saturday, October 15th, at 6, Upper Baker Street, when Miss Strong will read a paper on "Class Singing," and Dr. Buck will contribute one on the "Value of Technique."

All who are interested in musical education are eligible as members of the Union. All further particulars can be obtained from Miss Mixer, Mus. Bac., 7, Keith Grove, Uxbridge Road, London, W., or from me.

CECILIA HILL.

The Cedar House,
Salt Hill, Slough.

Method of Reducing Compound Practice to Simple Practice.

(1) Cost of 3 tons, 17 cwt. 2 qrs. at £4 5s. 6d. per ton.

First find cost at £1 per ton, when, of course, 1 cwt. will cost 1s. and 1 quarter 3d.

Tons	cwts.	qrs.	
3	17	2	
£1	1	3	
£3	17	6	= cost at £1 per ton

whence we can easily find cost at £4 5s. 6d. per ton.

(2) Cost of 25 acres, 3 roods, 14 poles at £59 8s. 9d. per acre.

As before, find cost at £1 per acre, *i.e.*, 5s. per rood, and 1½d. per pole.

Acres	roods	poles.	
25	3	14	
£1	5	1½	
25	16	9	= cost at £1 per acre,

whence find cost at £59 8s. 9d. per acre.

It will be noticed that the method does away with the necessity for manipulating fractions other than those concerned with money.

The method was communicated to me by a one-time assistant master at Liverpool College, and I believe it owes its origin to the then headmaster.

Grammar School, Tottenham. C. H. Cox.

MUTUAL AID.

THE object of these columns is to afford teachers the opportunity of asking questions of and giving assistance to colleagues. The questions received to which replies are solicited will be printed first; following these will be the answers which have been sent in, and, to make such replies intelligible to all readers, they will be accompanied by the question.

Readers are invited to send answers to any of the questions asked below by our correspondents.

The questions should deal only with educational matters, using the expression in a broad sense, and the publication or otherwise of any question must be left entirely to the discretion of the Editors.

Questions and answers should be addressed to the Editors of THE SCHOOL WORLD, St. Martin's Street, London, W.C., and should be accompanied by the full name and address of the sender, though not necessarily for publication. Each question or answer should be on one side only of a separate sheet of paper.

QUESTIONS.

C. H. C. (i.) Why was a Horse Power originally so called and how is the Horse Power of an engine computed?

(ii.) Will any schoolmaster who has taken up some branch of practical work, such as Electric Lighting, or any work which might prove profitable on compulsory retirement from teaching, give your readers the benefit of his experience?

R. H. S. Can any one recommend good set of free-hand drawing copies or test cards suitable for Cambridge Preliminary Local Examination work?

E. P. How can my new cinder playground be got to "bind"? It is on a slope. It was laid down with eight inches of broken bricks and four inches of cinders.

W. J. T. Would some reader, with experience of school dramatics, suggest some plays or portion of plays suitable for production in a mixed school?

M. REGIS, Ghent. Can anyone tell me where I can obtain English translations of the following books: "Les fâcheux," Molière; "Siècle de Louis XIV," Voltaire; "Scenes of Travel," Gautier. I shall also be grateful for the name of a good history of French literature suitable for pupils preparing for the Oxford Higher Local Examination.

QUESTIONS WITH ANSWERS.

A CONSTANT READER. *I saw recently a notice of a new English grammar for children, written in the form of easy stories or lessons. I cannot trace it. Can any reader help me to find it? The only child's grammar written in the same style that I know is Mr. Marcet's, published by Messrs. Longmans. Are there any others?*

S. P. I think the New English Grammar to which you refer is "Grammar Lessons," by the Principal of St. Mary's Hall, Liverpool (Longmans), 2s.

* * * * *

C. H. C. *Where can I find descriptions of (i.) Apparatus for finding the specific gravity of a volatile liquid. (ii.) The method of preparing a "constant volume specific gravity bottle" by adding a certain amount of mercury to an ordinary density bottle, so that its expansion counteracts that of the bottle?*

H. E. HADLEY, SCHOOL OF SCIENCE, KIDDERMINSTER. The most convenient method of determining the specific gravity of a volatile liquid is to weigh a *sinker*, of glass or other insoluble solid denser than water, in (i.) air, (ii.) water, and (iii.) in the volatile liquid. Alternative methods are given in Stewart and Gee's "Practical Physics," vol. i. (Macmillan).

The volume of mercury required to render constant the volume of a specific gravity bottle is readily calculated from the co-efficients of cubical expansion of the materials: the co-efficient for ordinary German glass is 0·000028, and that of mercury is 0·0001818. Hence, if $1/n$ is the fraction of the total volume which must be occupied by mercury, then $0{\cdot}0001818 \times \frac{1}{n} = 0{\cdot}000028$, or $n = 6{\cdot}5$. The total volume of the bottle is determined by weighing it when empty and when full of mercury (density of mercury, at 18° C. = 13·55). The required volume of mercury is calculated by dividing the total volume by 6·5.

* * * * *

H. E. H. *In Mr. Burrell's article on "The Coming of the New School-book," in the September number of* THE SCHOOL WORLD, *reference is made to Mr. Huntington's book on composition. Could you favour your readers with the full title and the name of the publisher of this volume?*

PRINCIPAL A. BURRELL. "Elements of English Composition." T. F. Huntington. (Macmillan.) 3s. 6d.

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ality is of all things the most difficult to obtain, and the eaching Geography for its "facts," instead of as an exercise as not made it easier. The conception of the commonest the ordinary pupil gets from Geography and History, as chools, is about as definite as his idea of Valhalla. He the remoter lands as *real* countries, with *real* people way his own daily life. A real background is essential History as the work of real men. How can we understand gs without knowing India, or Lincoln without knowing *is as absurd to study History or Geography without adequate nce of seeing places, things and people with the life-like reograph, as to study natural sciences without a laboratory.* **nce** *should be the foundation stone of mind building."—f Education, Boston.*

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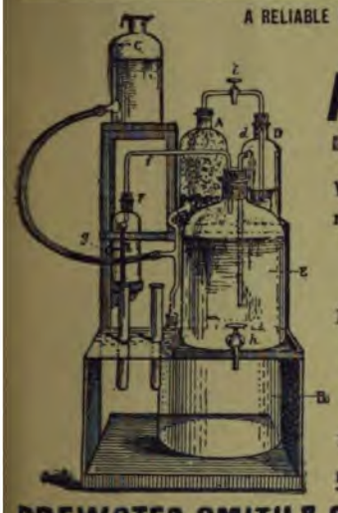

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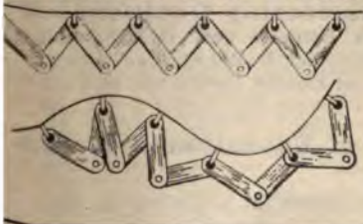

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The School World

A Monthly Magazine of Educational Work and Progress.

NOVEMBER, 1904. SIXPENCE.

EFORM OF SECONDARY UCATION IN IRELAND.

A SUGGESTED SCHEME.

By JOHN THOMPSON, M.A.

TIONAL reform is in the air, although ng has taken place in Ireland compar- to the great movement of recent years The time seems to be at hand for and well-informed plan by which Irish s a whole will be co-ordinated under authority. It is therefore not out of gest a scheme for the improvement of education which would fit in with a heme for education as a whole.

ct of any such scheme must be more lucation. The one here suggested on lines which have never been tried. s of recent years have had no finality Even the most outstanding feature, been the introduction of practical hing into all the schools, has been d by the very serious drawback that ıave now two masters instead of one, ıew master—the Department of Agri- Technical Instruction—has introduced ı restrict still further their already dom. The other reforms which fol- ommission on Intermediate Education d disappointing. In the first place, : follow the lines of the Report, while .e new rules have been extremely in- puzzling. Again, it is hardly the fault rmediate Board that the one reform on seriously prided themselves, viz., the ı of Inspection, has died an untimely hile it lived, it was unpopular; now dead, improvement in intermediate ; at a standstill. The attempt of the reate by its rules different types of not achieved any visible success. The ult of recent reforms has been, in a r from rather than towards greater ıd freedom, and yet freedom is the goal d at, and, subject to a few general re- each school should be autonomous. d then be general development and a healthy rivalry greatly to the benefit of the country at large.

As any scheme, to be successful, must conform to certain fundamental principles, these may be first briefly outlined. The ultimate control of secondary or intermediate education must be vested in a single board, largely assisted by experts. Every school must be treated as a whole, and there must be no artificial limit by which, as now, only students over thirteen years of age are taken into account. An efficient and thorough system of inspection must come into operation, but the mistake must not be made of supposing that inspection can do everything. It is also essential that teachers shall be properly qualified and trained, with the inevitable corollary that they shall receive adequate salaries and security of tenure. It is hardly necessary to add that religious difficulties must be avoided. Unless all these things are provided for, reform will be incomplete.

As Irish schools are singularly impecunious, it is of course necessary that they should continue to receive grants of public money, and the question arises, how? The present method of capitation fees is condemned, both on general educational grounds and for practical reasons. Up to three or four years ago it was customary to pay so much per hundred marks obtained by each pass student, now so much is paid per *caput* for each pass student, the amount varying with the grade, and being increased by one-half for each pass with honours. It has been suggested that payment should be made on the result of inspection, or of inspection accompanied by examination. But to make grants upon inspection alone lays too much responsibility upon the inspector. For example, a school might receive an unfavourable report and a diminished grant, when its shortcomings might be due to want of funds, and its last state would in consequence be worse than its first. If inspection be combined with examination, many of the evils of the present system recur, for examination means a programme imposed universally from without, and this means the absence of elasticity, the loss of initiative on the part of the teacher, and the forcing of all pupils together through the same mill. The same objection as before, though in a lessened degree, holds as against the inspection. Further, Ireland is and must remain a country of many small schools. The present system has

favoured the large as opposed to the small school, and, without implying that the large schools have received too much, it may be said that the small school requires proportionately more help, and this on any of the above systems is in practice impossible. Nor does any of them take direct account of the teacher, and the payment of a lump sum to the managers of schools, no matter upon what system, does not ensure to the teachers proper remuneration.

The scheme outlined below will, it is claimed, secure efficiency and freedom to the schools, a proper status to the teacher, and ample control to the nation. The school will be efficient in having an adequate staff of trained teachers, and will be free to arrange its own courses of studies and its own examinations. The teacher's status and tenure will be established, and he will have a defined and increasing salary and inducements to stay and improve in his calling. Inspection will supply, in addition to public opinion and the control of the central board as given below, a public test of the school work, a free play of intelligent criticism and suggestion passing from school to school, and a link between the schools and the central board of control. The scheme, then, is in outline as follows :—

The whole of secondary education in Ireland should be under one central board, containing two elements, viz., a small committee of paid educational experts and a larger committee of unpaid representatives of county and borough councils, universities, university colleges, learned professions and chambers of commerce. There would be little difficulty in arranging the relations between these two elements.

Every school connected with the board should have a managing or governing body resembling those already existing in many schools. These would have all the usual functions of such bodies, and would be the official means of communication between the schools and the central board. There would, of course, be no objection to the same body acting as managers or governors of several schools. While the central board might fix the minimum number of members, their mode of election should be absolutely free, with these two limitations, that the central board should have the right to nominate one representative, and that the County or Borough Council of the area in which a school is situated should also have the right to representation provided that it assesses a local rate in aid of secondary education. These representatives should be sympathetic with the general managing body, who might indeed be consulted before they were nominated. The distribution of the money raised by a local rate would naturally be determined by a joint committee of representatives of the Council and of all the schools within the area of its jurisdiction, with the proviso that the grants should be divided equitably between all the schools, except that a school refusing to admit a representative of the Council on its managing body might fairly be excluded.

We come to the question of teachers. The proposal is that the managing bodies shall pay to the central board a specified amount of the school fees, and in return the central board shall guarantee the salaries of the teachers according to a fixed scale. The managing bodies will have perfect liberty to charge whatever school fees they wish, but of these they will be required to pay to the central board so much per pupil per annum; the surplus will be at their own disposal. To fix definitely the amount per pupil in a scheme like this is impossible, but one might suggest £3 or £4 for each pupil under the age of 12, and £5 or £6 for each pupil over 12. With these figures, as school fees go in Ireland, the managing bodies would have (together with local grants and endowments, if any) a fair sum at their command to allocate to the upkeep of schools, examinations, prizes and exhibitions, to make capitation grants to the head teachers, and perhaps to add to the salaries of teachers, at all events in special instances. The ordinary scale of salaries will be determined by the central board, and, as all teachers will have to be properly qualified, trained and registered, it must be such as to attract able men and women. A fair scale will hardly fall short of the salaries paid to Civil Service clerks of the second division. All teachers would hardly come into the same class: there would be at least three classes, say, junior assistants, senior assistants, and heads, and the scale would be different in each class. Promotion from one class to another would be partly by merit and partly by seniority, and the more highly qualified teachers would no doubt be at once admitted to the senior class. A pension scheme follows as a matter of course. The number and class of teachers employed would be decided according to the wants of each school by the managing board, with the consent of the central board. The central board would have the right of vetoing appointments, and would also act as a final court of appeal for teachers in cases of dispute.

Every school would have freedom in its internal economy. It would fix its own studies, draw up its own programme, hold its own examinations and award its own prizes and exhibitions. The central board would define what is meant by secondary education, but within the board limits of such a definition there would be abundant scope for a great variety of different programmes. Thus we should have great elasticity, room for experiment, room for consideration of local needs, and when new methods or new subjects are suggested they could be adopted without unnecessary delay. Regular inspection by permanent inspectors, appointed by the central board, would naturally find a place in the scheme. It would be a useful stimulus to the schools and teachers in keeping them up to their best standard, in watching new developments, in reporting to the central board features of importance, and in offering suggestions for improvement. The inspectors would naturally have been teachers themselves, who for their ability had been promoted to the inspectorate.

There should be only one form of examination held by the central board, viz., that for a leaving certificate, which, it is hoped, might come to be regarded by the country generally as of real and lasting value in setting a hall mark on a pupil's capacity. Other examinations should be arranged for by each school separately. There would be no objection to a school making arrangements with the central board on payment of a certain sum to provide it with an external examination, but this would be optional. The guarantee of a school's efficiency under this scheme will be three-fold, public opinion, the qualifications of the teachers, and inspection.

If in any locality it should be proposed to open a new school, a local managing body would first form itself, and then appeal to the central board for permission to undertake the work. But in the large towns there is little doubt that the central board should aim at securing a small number of schools of different types.

The cost of such a scheme is uncertain. Much would depend on the amount of payment per pupil and the scale of salaries adopted. The former might, for security, be made at first somewhat high. But the scheme could not come at once into full operation, as some teachers would not be forthwith admitted to all its benefits as properly qualified, and meanwhile it may be hoped that Borough and County Councils would assist to some extent from the rates, as they might do, for instance, by guaranteeing to the central board so much per annum, in return for which the payment per pupil would be proportionately lowered. But taking matters as they stand at present, the Intermediate Board spent in 1903 over £57,000 on grants: in addition to this sum there would be immediately available from Intermediate sources a further £27,000, as over £22,000 was spent on examinations and awards, and £5,000 remained unspent from the year's revenue. The grants from the Department of Technical Instruction amounted in 1902 to nearly £10,000, and may be calculated to reach twice that figure in a year or two under present arrangements. This would give us about £104,000 altogether, while part of the development grant of £185,000 might be allocated in addition. It is to be hoped that no scheme educationally sound will be rejected on financial grounds, for secondary education in Ireland is in sore need of reform.

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THERE is a story that two young Englishmen were once sauntering through an Eastern bazaar, when, irritated at his failure to make his wishes known to the attendant, one said to his companion, "Oh! come along, the old fool doesn't understand plain English." Thereupon ensued the following colloquy:

"You spik Sherman?" "No!"
"You spik Grik?" "No!"
"You spik Turkish?" "No!"
"You spik Arabic?" "No!"
"You spik Russian?" "No!"
"Hein! me vunce fool, you five times fool."

The young fellow then probably realised better than the majority of his countrymen, to whom a polyglot facility is not a constant necessity, what a boon an "international language," a second tongue common to all civilised nations, would be.

No one doubts this in theory, and many have been the efforts directed toward the practical solution of the difficulty. Some scores of such attempts are to be found on the library shelves in the British Museum. They include polyglot vocabularies and ideographic systems, occasionally taking combinations of figures for the root-words, with letters and diacritical marks for the accidence, the reader supplying sounds from his own language to the signs, just as Chinamen from different provinces can understand the same manuscript without being intelligible in speech to one another, or as, when he sees 6, an Englishman says "six," a German "sechs," a Russian "shest," and so on. There are also original languages, evolved by associating certain sounds with certain ideas, and thus building words not akin to those of any existing languages (Herbert Spencer in an appendix to his autobiography has some preliminary notes towards the invention of such a language); and there are plans for taking some existing language, stripping it of its irregularities, phoneticising its spelling, simplifying its grammar and having it adopted as the "universal" language.

One attempt, "Anglo-franca," endeavours to make a blend of English and French. A specimen will demonstrate that the result is too ridiculous. (French pronunciation is adhered to.) "All the monde saçh that the commercial relations with the Etranger would be more facile if the entente would pouv to be etablissed more precis through the moyen of an langue connaissed by the du parties." This would seriously *endanger* the *entente*, one would think. Mere mention of one idea will be sufficient: national jealousy will ever oppose its realisation. This idea is that every nation should agree to adopt some existing language as a second tongue to be taught to everybody. But which? Moreover, for a foreigner every language involves great difficulties of spelling, pronunciation, grammar and idiom. The

only attempts which have achieved any measure of success are those in which the inventor has taken his words from existing languages and adopted a simple set of inflexions. Some fifteen years ago Schleyer's Volapük made considerable headway, and, notwithstanding its defects, proved that the want of such a language was very real. It is however, too difficult, and has been quite beaten out of the field by Zamenhof's Esperanto, which is really making most extraordinary progress.

Continental firms are finding it worth while to publish their catalogues in Esperanto, and it has been adopted by the Touring Club of France. The superiority of Esperanto over Volapük is shown in every direction. It is a pleasanter sounding language. It has no modified vowels (ä, ö, ü), which are very frequent in its rival, and the root words are taken unchanged from their source, while in the older attempt they are so altered as frequently to be unrecognisable. Esperanto roots are, where possible, those roots which are common to several European tongues. This point is clearly illustrated in the two names. "*Vola-pük*" means "world's language" or "speech." *Vol* is a modification of the English word "*world*"—*a* is the genitive termination and "*pük*" is our "speech" disguised. "*Esper-ant-o*" means "*hopeful*"; everyone can recognise "*esper-*" as "*hope*," *-ant-* marks a present participle, *-o* indicates a substantive. The Esperanto equivalent of *Vol-a-pük* is *lingv-o de la mond-o*, or, in one word, *mondlingv-o*, and no one need be a phenomenal linguist to recognise these roots. Other examples illustrating the same difference are:

Word.	*Esperanto root.*	*Volapük root.*
friend	amik-	flen-
cheat	tromp-	cüt-
ink	ink-	nig-
thought	pens-	tik-
esteem	estim-	stüm-

and so on. Then the Esperanto grammar is less complicated. Volapük nouns have three case endings, Esperanto only one (-n for the objective), while in Volapük the verb is a terror, so many are its inflexions, but the Esperanto conjugation is simplicity itself.

In Esperanto word building is extremely easy. It is done by about thirty prefixes and suffixes having fixed meanings. The use of such syllables may be briefly indicated by a few simple examples.

Syllable.	*Meaning.*	*Example.*
-il-	tool or instrument	*fos-i*, to dig *fos-il-o*, spade
-et-	diminutive	*dom-o*, house *dom-et-o*, cottage
-an-	member or partisan	*regn-o*, state *regn-an-o*, subject
-mal-	opposite	*bon-a*, good *mal-bon-a*, bad

By a most ingenious device, Dr. Zamenhof has rendered it possible for one who knows Esperanto to write a letter to a person who has not even heard of the language, and for the recipient, without much trouble, to be able to translate it. Small sheet vocabularies in various languages are published, and, having written one's letter, one has only to enclose with it one of the vocabularies, choosing the right language for the person addressed. If he will only follow the instructions given, the rest is easy. The device by which this is rendered possible is that of dividing the words into portions by hyphens; each part can be found in the vocabulary: *e.g.*, suppose an Englishman receives the following:—

Kar-a Sinjor-o
Mi esper-as ke vi bon-vol os
korespond-ad-i kun mi
Frat-e la vi-a
X

In the vocabulary he will find the following: *-a* indicates an adjective, *-ad-* indicates the duration of an action, *-as* indicates present in verbs. *bon-* good, *-e* ending of adverbs. *esper-* hope. *frat-* brother. *-i* indicates infinitive in verbs. *kar-* dear. *ke* that. *korespond-* correspond. *kun* with. *la* the. *mi* I, me. *-o* indicates a substantive (noun). *-os* indicates the future in verbs. *sinjor-* sir, Mr. *vi* you. *vol-* wish, be willing.

There is no need to append a translation.[1] In writing to an expert one omits the hyphens.

The suggestion to be made now may seem overbold to some. It is that a language like Esperanto, so simple, so easy, so logical, possesses great educative value, and might with an advantage (beyond that of the mere acquisition of an easy means of communication with foreigners) be adopted as a subject in a school curriculum.

For a large number of pupils in our schools, Latin, French, and German are subjects which seem to have very little practical value. Substitute Esperanto for these (in the lower forms, where languages are started), there will be a saving of time (for Esperanto will not require as much time as any one of them), and more space will be allottable on the time-table to other subjects, to which, owing to the multiplicity of requirements, insufficient time is at present given. Esperanto has been adopted as a subject in at least one English school, and the teacher speaks enthusiastically of the interest which its word-building facilities inspire in the pupils. They also get good training in the correct meanings of words. Moreover, when it becomes plain that an acquaintance with another language is a necessity for any particular pupil, it may be confidently asserted that one who has been through a course of Esperanto (possessing a copious stock of roots which he will be constantly recognising) will be in a better position to make progress in Latin or a modern language (such as English, French, Italian, or Spanish) than students who have been without his advantage, and that he will rapidly overtake most who have started some time before him. Is it not the pretty general experience of teachers that this has been the most valuable use of Latin for such as have not wished to go through a full "classical" course?

Should this article induce any teacher to investigate Esperanto, he will find a revelation. In an hour or two he will be able to write and understand a letter; in a week (with half-an-hour a day) he

[1] In accepting an engagement to give a lecture on Esperanto recently, the writer successfully made all arrangements with the secretary of the club without writing a word of English. His correspondent had no previous acquaintance with Esperanto.

will read easily, and in a month he will speak with better fluency than he could hope to attain after a year with French or German. The writer (whom a conscientious study of Volapük for months had caused to deem the invention of an artificial language a hopeless task) "came to scoff, remained to pray."

As regards the indirect educative value of Esperanto and its powerful agency in spreading scientific knowledge and facilitating commerce, much might be said. Suffice it on this occasion to mention that there is at present being published (entirely in Esperanto) a monthly organ called *La Internacia Scienca Revuo* (6d.), to which articles are contributed by such eminent men as Adelsköld (Stockholm), Baudoin de Courtenay (St. Petersburg), Prince Roland Bonaparte, Becquerel (France), Förster (Berlin), and our own Sir William Ramsay, F.R.S., and that in France alone over eighty large firms have found it advisable to publish their catalogues in the "International Language."

ON THE PRINCIPLES OF MATHEMATICAL TEACHING.

By DAVID MAIR.

THE system of mathematical education which so long prevailed and from which we are now beginning to break away follows to some extent the growth of mathematical knowledge. Geometry was developed in Greece, algebra and trigonometry by the Hindus, and in the middle ages western Europe received all three from the Arabs of Spain. These subjects now form the staple of secondary education. Cartesian geometry, which dates from the seventeenth century, is now gaining a foothold under the name of "graphs," while the differential and integral calculus, dating from the eighteenth century, is still confined to education of university grade.

This system would therefore appear to be true to the historical method, which requires that the education of the individual should follow the growth of knowledge in the race; and yet the inadequacy of the system is now recognised. The truth is that it has only a superficial resemblance to the historical method. To proceed from arithmetic to Euclid's geometry is not to follow the growth of knowledge in the race. Euclid came far on in the mathematical development of the Greeks. He systematises and puts into logical form all the knowledge that had been gained up to his time. Such systematisations are useful and interesting to the student who has made some progress, but they hide the order of development. The race, like the child, frequently comes to knowledge by tortuous ways and at the expense of mistakes. And though the teacher who uses the historic method must not lead the mind of the child astray—for it is a general principle to teach nothing that must be unlearned—he must yet lead it from step to step in the development of the subject. In hurrying the child from arithmetic into the midst of Euclid's generalisations a great gap is left in this natural development. It is necessary in forming a new plan to analyse the history of the subject and pick out the essentials of development.

This analysis may have been made by many men. That of Mr. Branford, the Director of Education in Sunderland, deserves consideration as being the result of historical study checked by the study of children. He recognises three stages in the mathematical growth of the race or the individual, which he calls the empirical, the intuitional, and the logical. These three stages are not distinct, the point of transition from one to the next cannot be located; they are rather three methods that run side by side throughout, each increasing or decreasing in importance as the development proceeds.

At the beginning of the empirical stage with the race the other two methods can hardly be said to exist. Thus a rule for area, that is a lucky or unlucky guess, is used without any thought of testing its accuracy. Its counterpart in school teaching is possibly the substitution of numbers in formulas; the principle that nothing should be taught to be unlearnt later of course excludes the incorrect formulas of the ancients such as that of valuing a farm by the length of its perimeter. Later in the empirical stage with the race, formulas were tested by application to cases in which the result was otherwise known. At the present day area-formulas are readily tested by the use of squared paper.

In the next stage in which intuition comes to the front, proof goes no further than a reference to obvious properties, and there is no consideration for logical completeness, which idea has not yet arisen. For example, to persuade a person at this stage that the three angles of a triangle make up two right angles, it is enough to call attention to a pavement made up of triangles all of the same size and shape. This proof is sufficient for the great majority of educated persons at the present day, who find no meaning in speculations as to what would happen if parallel lines did not meet, or whether two sticks equal in length in one part of space will be found equal if tested in other parts.

Lastly, the idea of logical completeness arises, and the aim is to start from the smallest possible number of propositions, so obvious that no one can deny them, and build up from them by flawless reasoning the whole body of mathematics. It appears, however, that no one of these fundamental propositions is too obvious to be questioned. Any of them can be discarded, and a new system of mathematics built up differing from the old, and usually agreeing only slightly with our experience. Again, the building up is not found to be flawless; steps are frequently taken by Euclid, and by his successors to the present day, in which there is an implicit appeal to intuition. Though the axioms are being reduced in number and made more obvious, it is doubtful if the system is becoming more satisfactory to the reason. As reason repairs

a breach at one point, reason also makes a breach at another. It is possible that logical completeness is attainable and that in a more fortunate age than this the breaches may diminish in number and seriousness; it is also possible that completeness is unattainable. The question is still under discussion among mathematicians and philosophers. These are apparently approaching an agreement that, as in the case of any other body of systematic knowledge, that system of mathematics is most satisfactory which best fits our experience. In other sciences men work at both ends, acquiring new facts on one hand, and simplifying theories on the other, and are greatly pleased at pushing the boundary of the region of knowledge a little further at the expense of the kingdom of darkness, without demanding instant abolition of the darkness. Perhaps in time we shall rank mathematics as a science differing from others only by being a trifle more exact.

Be that as it may, the average mind on leaving school has not attained such development as to require great rigour of proof. To a mind at this stage the intuitional method is still appropriate in many parts of mathematics; for instance, in the discussion of a tangent as the limit of a secant. And the question with regard to the presentation of a proof to the schoolboy should not be "Is the proof rigorous?" but "Is it suited to his stage of development? Is it calculated to compel his assent?"

THE NEW REGULATIONS FOR SECONDARY SCHOOLS.

ENGLISH LANGUAGE AND LITERATURE.

II.—SUGGESTIONS FOR COURSES.

By J. H. FOWLER, M.A.
Clifton College.

IT has been suggested to me that one or two specimen four-year courses of English literature, drawn up on the lines of the recent circular of the Board of Education, might be useful to teachers. In the two that follow I have allowed three prose text-books to each year, one for each term, and I have tried to establish some relation, where it seemed practicable, between the prose and the poetry. That relation need not be the same in each case. We may find it useful to take the "Faerie Queene" and "Utopia" together, because they have a common historical setting in that they were both produced in sixteenth-century England, or because we can compare and contrast the ideals of poet and statesman, the one gazing back into the past, the other with his eyes turned toward the future. Similarly, Tennyson's "Coming and Passing of Arthur" connects with Carlyle's "Heroes"; the one giving us the poet's and the other the philosophic historian's theory of the true king and his work. Or, again, we may take Milton's shorter poems with Johnson's life of Milton; studying the seventeenth century appeared to the eighteenth, and making John criticisms a point of departure for our own. important thing is to get a relation of some because in doing that we get the beginnin criticism and a stimulus to the nascent lit sense. Also, it will be observed that we g once an opening for profitable compositions. best subjects, it may be said generally, are which involve some act of comparison.

SPECIMEN FOUR-YEAR COURSE (A).

Year of Course.	Age at Entry.	Texts: Poets.	Texts: Prose Auth
I.	12-13	(1) Selected Poems (Children's Treasury). (2) Ditto. (3) English Ballads.	(1) Hawthorne (Won Book for Boys and (2) Ruskin (King Golden River). (3) Lamb (Advent Ulysses). *Holidays*—Kingsley Babies).
II.	13-14	(1) Scott. (2) Ditto. (3) Campbell or Cowper. (Simple Poems.)	(1) Lamb (Tales from Shakespeare). (2) Irving (Sketch-Bo (3) Anson (Voyage the World). *Holidays* Scott (T or Ivanhoe).
III.	14-15	(1) Shakespeare (Julius Caesar). (2) Milton and Gray (Hales, Longer English Poems). (3) M. Arnold (Sohrab and Rustum, &c.).	(1) Macaulay (Ess Clive). (2) Johnson (Lives of (3) De Quincey (Ess *Holidays*—Dickens Two Cities).
IV.	15-16	(1) Shakespeare (Richard II.) (2) Paradise Lost. (3) Tennyson (Princess).	(1) Macaulay's Hist (ch. I.). (2) Selections from Sp (3) Ruskin (Sesam Lilies). *Holidays*—Thackera mond).

SPECIMEN FOUR-YEAR COURSE (B).

Year of Course.	Age at Entry.	Texts: Poets.	Texts: Prose Auth
I.	12-13	(1) English Ballads. (2) Selected Poems. (3) Ditto.	(1) Kingsley (Heroes) (2) Malory (Morte d' selections. (3) Heroes of Asgard. *Holidays*—Kingsley ward Ho!)
II.	13-14	(1) Pope's Iliad. (2) Lyra Heroica. (3) Ditto.	(1) Plutarch (Alexan Great). (2) Southey (Life of N (3) Scott (Talisman). *Holidays*—Blackmor na Doone).
III.	14-15	(1) Dryden and Pope (Longer English Poems). (2) Gray and Coleridge (Longer English Poems). (3) Shakespeare (Merchant of Venice).	(1) Steele and A (Coverley Papers). (2) White (Natural H of Selborne). (3) Macaulay (Essay dison). *Holidays*—Scott (Old tality).
IV.	15-16	(1) Shakespeare (Twelfth Night). (2) Spenser (Faërie Queene, Bks. I., II.). (3) Tennyson (Coming and Passing of Arthur).	(1) Eighteenth Centu says, or Essays o (selected). (2) More's Utopia, o con's Essays (selec (3) Carlyle (Heroes). *Holidays*—C. Reade ter and the Hearth

i the Board of Education expressly state that ɔooks in their list are only to be regarded as a ɔut of "the numerous texts which may advan-ɔusly be studied," I have not confined myself ıeir list in drawing up my two specimen courses. :he other hand, every satisfactory course *must* ıde some of the authors on the Board's list. cannot cover the whole of English literature four-year course, but every such course ought :ontain some Shakespeare and Milton, and e of the best and most characteristic work of eighteenth and nineteenth centuries.

ı addition to the books named in the Board's (SCHOOL WORLD, October, 1904, p. 384), and ıose given in my two specimen courses, the wing may be found suitable for use :—

ST YEAR—
- Stories from Herodotus.
- Stories from Chaucer.
- Stories from Froissart.
- Hawthorne, Tanglewood Tales.
- Adventures of Beowulf.
- Rab and his Friends.
- Mrs. Gatty, Parables from Nature.
- Warde Fowler, Tales of the Birds.
- Pilgrim's Progress.
- Robinson Crusoe.
- Dickens, Christmas Carol.

ND YEAR—
- Defoe, Journal of the Plague Year.
- Dampier's Voyage round the World.
- Hawkins, Voyages.
- Kingsley, Hereward the Wake.
- Dickens, Oliver Twist, &c.
- Mrs. Gaskell, Cranford.
- Goldsmith, Vicar of Wakefield.

RD YEAR—
- R. and E. B. Browning, Simpler Poems.
- Byron, Childe Harold's Pilgrimage.
- Hawthorne, House of the Seven Gables.

RTH YEAR—
- Chaucer, Canterbury Tales.
- W. Morris, Jason.
- Hazlitt, Characters of Shakespeare's Plays.
- English Men of Letters (especially Pattison's Milton, Stephen's Johnson, Black's Goldsmith, Myers' Wordsworth, Colvin's Keats, Ainger's Lamb).
- Kinglake's Eothen.
- Helps, Essays written in the intervals of business.
- Kingsley, Hypatia.
- G. Eliot, Romola, Silas Marner, Mill on the Floss.

ı book is given for holiday reading once or a year, it will be possible to cover much ground than without this help. But if the ıy task is to be of any educational value, ıbove all, if it is to act as a stimulus and not deterrent, it is desirable that the teacher ıl not feel that his duty is ended when he has n the book and announced it to the class. A ıinary sketch of the plot, or of the opening ers, may do much to arouse interest; and ıpils should be given some idea of the points ıich they ought to direct their attention in ng the book.

ne of the books in the above lists are more ɔle for girls than boys: *e.g.*, "Cranford" and, ps, "Sesame and Lilies." It must be re-ɔered that no ideally perfect list can be drawn up by one who knows nothing of the particular pupils by whom the authors are to be read: the lists must be modified by the teacher in accordance with the special circumstances.

CHEMISTRY OF DAILY LIFE.

II.—AN ELEMENTARY COURSE OF WORK.

By F. R. LEYLAND WILSON, M.A.
Charterhouse.

CHEMISTRY plays such an important part in modern life that it would be quite impossible to touch more than the fringe of its many applications in an elementary course, and in sketching out such a course only those subjects will be introduced which admit of simple and connected treatment; but, as it is certainly not advisable to proceed to the study of chemistry without a preliminary course of a physical character, it is first proposed to indicate the lines on which such a course may be drawn.

INTRODUCTORY WORK IN PHYSICS.

It is important to ensure that the metric system is thoroughly grasped and to give plenty of practice in simple physical measurements. This will be followed by the study of the construction and principles of the balance.

The use of instruments for the measurement of volume being known, the determination of the weight of a cubic centimetre of water is made and the origin of the gram weight explained; at this point the importance of the fact that water is heavier at a particular temperature a few degrees above its freezing point than at any other point should be noticed.

The densities of some other liquids may be compared with that of water and the use of density for the purpose of identifying substances may be pointed out. The study of solution is introduced by the evaporation of tap water, showing the presence of matter not separable by filtration; this is followed by distillation, the boiling point of the liquid being noted.

Experiments are done next on the solvent powers of pure water and the different solubilities of different solids are noted. The "solubilities" of common salt and of gypsum at the laboratory temperature are determined, the meaning of the terms "saturated" and "unsaturated" solutions having first been explained.

Experiments. Slow and quick evaporation, and the preparation of crystals.

An elementary study of the forms of crystals may be made at this point, some common natural crystals being examined and their angles measured; calcite, quartz, fluor-spar, and selenite afford suitable material, besides the crystals prepared in the laboratory, such as those of alum and copper sulphate, which are easily obtainable of sufficient size for measurement.

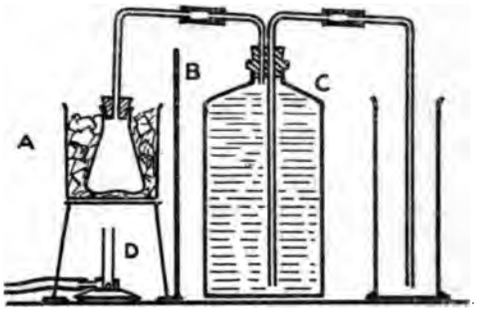
The effect of heat on crystals may be shown and the presence of "water of crystallisation" discovered, the boiling point of the liquid being used to identify it. The residue from the crystals which have lost their water is redissolved and crystals are again obtained; the change in colour which anhydrous copper sulphate undergoes on solution in water forms a rapid and satisfactory means of recognising water, even in very small quantities.

At this point the percentage of water lost by crystals of copper sulphate and Epsom salts under the influence of heat may be determined, and the fact that the quantity is definite should be noted.

Further experiments on the effect of heat on crystals may be done with soda crystals and with "hypo;" the melting points of these substances may be determined and the use of this property for identification may be noted. Various other points may be illustrated by the use of "hypo," such as latent heat of fusion and the properties of supersaturated solutions.

The study of the physical properties of air may be begun and the discovery of the fact that it has weight forms a good introduction; this naturally leads to the barometer, and an opportunity occurs for the study of the pressure of gases and vapours.

The laws of Boyle and Charles may be taken at this point. The former of these is not suitable for



A. Beaker containing ice. *C.* Bottle filled with water.
B. Cardboard Screen *D.* Bunsen Burner.

laboratory experiments for beginners, but the expansion of gases under the influence of heat can be shown by the boys themselves, and Charles's law may be worked out in the class-room from their own measurements. A simple arrangement for temperatures between 0°C and 100°C is shown in the diagram, which explains itself.

After the pressure of gases has been grasped the pressure of vapours may be taken and a better understanding of the meaning of "boiling point" will be gained.

The experiments so far indicated represent the minimum quantity of physical work which ought to be done before proceeding to the study of elementary chemistry, and it might well be supplemented by a more systematic course on the elements of heat.

The Course of Chemistry.

Before going on to the chemical part of the course some problems on identification by means of density, boiling point, melting point, crystal form and solubility will be found of value.

No subject is more suitable as an introduction to elementary chemistry than burning, both from its familiarity as a phenomenon of every-day experience and on account of the readiness with which it lends itself to simple treatment. The subject being so familiar, it is a good thing to begin by requiring the class to answer a number of questions on burning, so as to enable the boys to collect their views on the matter.

Experiments on the effect of heating metals, such as copper, zinc, lead, and magnesium in air, are done and the members of the class are required to give such explanations of the changes observed as they may think sufficient; means of testing their explanations are next devised and put into practice. That the metals change in weight is discovered, and the false explanations are sifted from the possibly true ones.

Experiment. The fact that a crucible has not altered in weight as a result of heating is shown.

Experiment. A crucible filled with dried sand is weighed and strongly heated, and the weight after cooling is found to be the same. A strip of magnesium is embedded in the sand and no change of weight is found after the crucible has been strongly heated and cooled.

That magnesium gains in weight when air is not excluded has been shown in a previous experiment. Air is thus shown to be concerned in the burning of magnesium.

Experiment. The burning of phosphorus in a dry bottle shows the production of a white solid.

The next experiment shows that the phosphorus gains in weight and that the gain in weight is equal to the loss which the air undergoes.

Experiment. A flask of 300 c.c. capacity is taken, some dry sand is introduced and a small piece of phosphorus is dropped on the sand, and after the mouth has been closed by a well-fitting rubber stopper the whole apparatus is weighed. The bottom of the flask is warmed carefully, and as soon as the phosphorus begins to burn the flask is well shaken, and set aside to cool; on weighing no change in weight is observed until the stopper is removed for a moment.

Experiment. Iron filings are allowed to rust, they having been previously weighed; on the second weighing an increase will be found to have taken place.

Experiment. A gas jar, the inner surface of which is coated with wet iron filings, is inverted in a trough of water and left for a few days. The mouth of the jar is covered with a glass plate and removed from the trough, and the air left is tested with a burning splinter of wood and shown to be different. The volume of air lost is measured and the percentages of air lost and air left are calculated.

The conditions under which iron rusts are not thoroughly understood, but experiments showing that the presence of water as well as of air are favourable to rusting can easily be devised.

At this point it is well to bring in the work of Priestley and Lavoisier, particular stress being laid on the quantitative character of the work of the latter. Lavoisier's experiment on the oxidation of mercury can very well be shown as a

lemonstration if care is taken to regulate perature of the mercury.

ient. The preparation of oxygen from mercury oxide llection over water.

ient. Burn charcoal in oxygen and note that the gas s different from oxygen. The lime-water test for carbon ay be done at this point. It is a good thing to prove as actually contains carbon, by burning magnesium in taining a black substance, which can be proved to be nce it again yields carbon dioxide on combustion.

ient. The preparation of nitrogen by passing air d copper filings. The copper must be cleaned from vise carbon dioxide will be found on testing the gas water. A tube six inches long is sufficient for the ngs and the heat from one Bunsen burner is all that]. The air is driven from a flask by pouring water tle funnel; from the flask, the air passes to a tube of ngs and from thence to a delivery tube dipping into f water.

rogen is tested with a burning match and a fresh vith lime water; a specimen of artificial air may be aixing in the right proportions oxygen prepared from xide with nitrogen obtained from air, and the lengths aring which a candle will continue to burn in the nd natural airs may be compared.

s point it is well to show the presence of ses in the air besides oxygen and nitrogen; sence of water is shown by exposing an- copper sulphate for an hour, and of carbon by drawing air through a wash bottle ng lime water.

dy of the burning of a candle, coal gas, raffin oil, coal, coke, wood and paper may begun; the experiments being preceded mmary of the results on burning so far

ient. Examine the burning of a candle (1) in the (2) in a dry bottle with the mouth closed. The f moisture is noted and also the fact that the air in no longer supports combustion. The production of xide is proved.

ient. Collect larger quantities of the products of g of a candle and identify the liquid as water by nt and the copper sulphate test.

ient. Show that the products of burning are heavier ndle.

ient. Similar experiments with coal gas, showing on of water and carbon dioxide.

ient. Burn spirit and show that water and carbon formed. It is necessary to use absolute alcohol for nent and to show that water is not present in the ohol before testing for water in the products of its ; the copper sulphate test for water is sufficient in iments.

native method is to draw the products of burning l spirit-lamp through two U-tubes, the first of ooled in water, the second containing lime water. may have a wick of asbestos which has been shown to be incombustible.

ent. Burn coal gas and collect the products. A is burned on a glass jet placed beneath a funnel, re attached two U-tubes as in the previous experi- the purpose of causing the products to pass through , either an aspirator or a Bunsen water-pump may e latter is very often of use in elementary work and essary to have much pressure of water).

Experiments. Similar experiments to those with alcohol, using paraffin oil.

In this case the production of soot will be noticed; some of the soot may be collected and be proved to be carbon by burning it in a stream of air and collecting the escaping gas in lime water.

Experiment. Heat coal dust in closed and open crucibles, and note the difference. A small quantity of coal should be used, otherwise the carbonaceous part will take a long time to burn away.

Similar experiments may be done with wood, and the relatively small quantity of ash left in this case may be noticed. The percentage of ash left on the combustion of each of these substances when carefully burned in an open crucible makes a good experiment.

As a means of giving an elementary idea of the preparation of coal gas, the dry distillation of coal may be carried out in a hard glass test-tube; the gas from the coal is passed through a flask cooled by water and is collected over water. The gas may be burned and the production of carbon dioxide be shown, also the coke may be taken from the tube and heated in an open crucible, to show that it still contains combustible matter and leaves an ash. The flask will be found to contain a watery liquid in which tar is floating; the smell of ammonia will be perceptible on warming after the addition of lime.

At this point it is advisable to deal with the conditions necessary for the production of flames.

The part which oxygen plays in burning has already been shown, and the necessity for the presence of two parties to the burning should be impressed. That oxygen may burn in coal gas under suitable conditions forms an instructive experiment for laboratory work.

Experiments to show that substances require to be heated to a definite temperature before burning will begin, may be done; the low temperature of ignition of phosphorus, as compared with that of sulphur or coal gas, make the point sufficiently clear, and a simple way of showing the point is to float crucibles containing fragments of sulphur and phosphorus in a beaker of hot water.

The temperatures of ignition of coal gas and carbon disulphide vapour may be roughly compared by attempting to ignite each of them by a heated glass rod. Experiments may follow on the cooling of flames by metal wires.

Experiment. By placing a coil of thick copper wire into the flame of a candle the flame may be nearly or quite extinguished.

Experiment. Show that a flame will not pass through wire gauze until the gauze is red hot.

These experiments lead up to the miner's safety lamp, the principle of which will not present any difficulties.

The structure of the luminous gas-flames should be examined and compared with the flame of a candle; the presence of unburnt gas in these flames can be shown, the gas being drawn into a flask by the flow of water from it.

Experiment. Soot may be collected from the luminous flames of coal gas and of a candle, and proved to be carbon.

Experiment. The increase in luminosity caused by the introduction of fine powders into the non-luminous flame may be shown.

The existence of a non-luminous mantle surrounding a luminous flame can be shown by holding in the flame a carbonised match-end which has been saturated with salt solution.

The production of carbon dioxide by the burning of coal and fuels of various kinds raises the question as to why the air does not become much more contaminated with this gas than is apparently the case, and a study of the action of plants on the air naturally follows.

Watercress will rapidly use up the carbon dioxide produced by the burning of a candle in a flask of air, if the flask containing it is exposed to bright sunlight.

Experiment. Five or six sprigs of watercress are put into a 500 c.c. flask. A candle is fixed to a wire passing through a cork, the candle is lighted and plunged into the flask and the cork is pressed home; as soon as the candle goes out it is removed and relighted, and again plunged into the flask to make sure that all the oxygen is used up. The corked flask is then put in a sunny place for an hour or more and kept for the next lesson, when the air will be found to have recovered its power of allowing a candle to burn in it.

Another experiment, exactly similar, except that a little lime-water has been put into the flask, may be set up at the same time as the other; the air in this flask, of course, will not recover its power of supporting combustion, showing that it is the carbon dioxide which the plant takes, when at the same time it gives back oxygen.

An experiment to show the formation of bubbles of oxygen may be shown, but I think that the above experiment is sufficiently convincing.

That breathed air is rendered good by sunlight in the presence of watercress makes an excellent experiment.

(To be continued.)

THE EDUCATION AND STATUS OF WOMEN.

By CAMILLA JEBB.

"IS marriage a failure?" seems to be one of those problems which on this side of time we are destined to have always with us. Even apart from internal evidence, all written testimony goes to prove that the question is as old as the institution to which it refers, and, from the day when it was first asked, it would appear quite as often as not to have been answered in a spirit which for downright pessimism need fear no competition from any of those communications with which the *Daily Mail* is at present favoured. The obvious solution of the problem which, like other obvious things, is liable to be overlooked in the heat of controversy, lies in realising that the question is one which can only be answered in each case by individual experience, and that those whose experience has been unhappy have in all ages been distinguished from their more fortunate fellow-creatures by a desire to take the world into their confidence.

A more definite issue, however, is raised by the assertion so frequently and so confidently made that recent changes in the education and status of women have tended to diminish the net amount of matrimonial happiness which would otherwise have been at the disposal of the race. We scarcely think it likely that such a thesis will commend itself seriously to readers of this paper, but that the last fifty years have introduced some novel factors of the utmost importance, not merely into the problem of marriage, but into the whole question of the relations between men and women, no rational person will deny. A free discussion of those factors, their nature and their effects, is inevitable, and from many points of view desirable, and we are willing to welcome Mr. Cloudesley Brereton's contribution to the controversy and even the comments to which it has given rise. His recent article, moreover, in the *Pall Mall Gazette* deals with the capabilities and the claims of women in a spirit which by its generosity must needs appeal to a member of the sex chiefly concerned. His feminism, however, is open to the objection which may be urged against the socialistic views of William Morris, that, namely, of having reference to the future rather than to the present, and especially of inclining to the disparagement of the average individual—this last tendency being one against which educationists, above all other persons, cannot be too much on their guard. We are, besides, not always convinced of the accuracy of his premisses regarding the distinctions at present existing—to the disadvantage of the latter—between men and women. The poor law guardian (by-the-way, has she an objective existence?) who was of opinion that it was rude to contradict a lady was only translating into the appropriate gender a kind of protest frequently heard from masculine lips on such occasions, to the effect that a gentleman's word ought not to be doubted; and as long as men, in obedience to the dictates of fashion, compress their necks in high collars and burden their heads with chimney-pot hats, the resulting effect being neither hygienic nor beautiful, they have scarcely the right to lecture women upon an exuberance in the matter of skirts, which in itself is graceful and becoming, though certainly quite unfitted for outdoor wear. Besides, if Mr. Brereton had used his powers of observation, or even read his *Punch*, he would have realised that the desired "couple of inches" and rather more have already been cut off from "those miserable, trailing outdoor skirts."

For his highly suggestive theory that the failings of the weaker sex are mainly traceable to the fact that "women have never yet had a fair chance of educating women," we are unfeignedly obliged to him. Though far from being entirely true, it undoubtedly contains a large element of truth. We certainly find something of the inaccuracy already alluded to in his statement of the facts relating to what is commonly known as "the higher education of women." "We have given her"

man) he says, "an education of a kind, but it been an education whose programmes, aims, l ideals have had to be copied from that which s meant to prepare men, or else have been con-lled, if not at every stage, yet at headquarters, men only." As a matter of fact, it was by the ire of women themselves that their education s been brought (more or less) into line with that men, and the hard battle by which existing con-ssions on that point have been obtained was ght out inch after inch by women, and by men om they had enlisted in their cause. Nor do agree with Mr. Brereton that this movement is in a wrong direction. The educational "pro-ammes, aims and ideals" of men were, at any te, the best which up to that time had been rmulated, and hence quite worth a trial. Only experiment can it be decided how far the same stem of instruction is applicable to both sexes. niversity training for women has now been on trial some thirty years, and we believe that it justified by its results. The services which men have thereby been enabled to render, not ly in education but in research work of every scription, are alone sufficient to redeem it from charge of failure. Girls' schools are doubtless in the crucible, but in proportion as they have similated the methods once considered exclu-ely masculine, there has been a marked advance *esprit de corps* amongst school girls and in the ial status and estimation of female teachers, l all this is clear gain. It seems plain that the st education must be one which recognises the ad basis of common humanity underlying the dis-ctions of sex. But with Mr. Brereton's conten-n that women should be allowed a larger share the control of educational machinery, as regards ale education at all events, we cordially agree. is true that some steps, of which he seems aware, have been taken in this direction. On erring to "Whitaker's Almanac" for the current r we find the names of eight women on the list H.M.'s Inspectors of Schools, who number in nearly two hundred. Three of the eighteen mbers of the Consultative Committee and two of the twelve who make up the Teachers' gistration Council are also chosen from the staff side." The much canvassed Act of 1902, making the presence of women compulsory on l educational bodies, has in many unprogressive ricts introduced a feminine element unknown in days of School Boards; but who will venture aintain that all this amounts to an adequate esentation of the sex which, as we are fre-tly reminded, constitutes the larger part of the lation? In every direction we notice the ts of the handicap produced by defective al recognition and the consequent apathy of lic opinion. In the suburban district, for nple, where these words are written, three ndary schools for boys, of established reputa-, are to be found at distances from each other exceeding three miles; a much longer journey st be undertaken before a single girls' school apying a position at all similar can be reached. Could such a difference exist if the principle that women have equal rights in education with men had been accepted by the nation?

That only women can, in the case of girls, effectually deal with those questions of health and home obligations which must be recognised in any educational system worthy of the name will scarcely be denied. But perhaps the more extended co-operation of men and women is chiefly to be desired, because of the broadening effect which it necessarily produces, not, we are bold enough to think, upon one sex only. The principle that women are the natural instructors of women, which now obtains to a much greater extent than at the beginning of the higher education movement, has many great advantages, but by it girls are undoubtedly debarred from a valuable opportunity of learning the man's point of view and *vice versa*. The remedy, sometimes suggested, of an interchange of pupils and teachers does not appeal to the slowly moving British mind; there are even rumours that the chivalrous American male regards such an arrangement with qualified approval. There is all the more reason why men and women concerned in education should counsel and help each other, and thus establish a precedent which may in time be followed in every department of human affairs. We will not quarrel with Mr. Brereton's opinion that women must for a time be contented to concede to the opposite sex the position of predominant partner. That they are, generally speaking, almost pathetically ready to do so, in the case of men competent to lead them, must be patent to everyone who has any experience of women in university or professional life.

NEW GEOLOGICAL MAPS.

By A. MORLEY DAVIES, B.Sc., A.R.C.Sc.

THE Geological Survey is doing a great service to teachers and students by setting itself to provide a low-priced colour-printed edition of its map on the scale of one inch to a mile. Only a few sheets are as yet published, and, as a re-survey must precede the issue of some of the others, it will be many years before the map is complete. The recent issue of four sheets of the London area affords a convenient opportunity to take stock of what is already available. As a preliminary we may remind the reader that a complete colour-printed geological map of England on the scale of four miles to the inch, in fifteen sheets at half-a-crown each, has been published for some years; but, though useful for showing the geological structure of large areas, this map is on too small a scale to be of much practical use in the field, the sheets are too large for easy handling, and, above all, they confine themselves to the "solid geology" and ignore "drift." Let us clearly understand what these terms mean.

"Solid" Geology.

The geological formations, the nature of which so largely determines the scenery and soil of a country, may conveniently be divided into two kinds. There is no absolute distinction to be drawn between them, and one may sometimes be puzzled into which category to place a particular deposit, but in general the differences between them are well marked. "Solid" geology deals with those older rocks the deposition of which altogether preceded the existence of modern land-surfaces, and took place for the most part at the bottom of ancient seas. It is convenient to assume that such deposits were originally perfectly horizontal, of unlimited horizontal extent and unchanging in thickness from place to place. This assumption makes it possible to draw up quasi-mathematical rules as to their behaviour after they have been disturbed from their original horizontality by tilting, folding and faulting, and then carved by the agencies that shape the land surface. A "solid" geological map is thus the representation of the intersection of the ground surface with the surfaces of successive strata. In the simplest possible case, where the strata retain their horizontality, the geological boundary lines (being the intersection of horizontal planes with the surface of the ground) are of the nature of contour lines. A magnificent example of this kind is the Cañon district of the Western States, and approximations to it occur in some of the oolitic districts of England. In such places most hill-tops are capped by a detached fragment—an *outlier*—of some formation, while at approximately uniform levels along valley-sides run the *outcrops* of successive formations—each being the denuded edge of a solid sheet of rock, making its appearance between an older sheet below and a younger one above. With perfectly horizontal strata of uniform thickness, outcrops and outliers exhaust the possible forms on the geological map, but once a slight warping is allowed a third form, the *inlier*, becomes possible—an exposed portion of some formation peeping up in the middle of younger ones, at first only as a narrow strip along a valley-bottom, but with increased steepness in the folding appearing often even at the top of a hill.

Such are the simple phenomena shown by the "solid geology" of a district: with the addition of a few "faults" or fractures of the strata, they are nearly all that are illustrated by the London sheets. In other areas greater complexities are introduced by the fact that strata were not originally all horizontal, or of unlimited extent or unchanging thickness, but into the resulting features we cannot now go.

"Drift" Maps.

In contrast with the deposits we have been speaking of, we find others of comparatively modern date, which differ in the fact that they were *deposited on an uneven surface* much like the land surface of to-day, indeed for the most part on this very land-surface in an earlier stage of its evolution. Further, they were deposited very locally, and, though they have been more or less cut away by denudation, it is never safe to assume an original extension much beyond their present area. Applied to these, the quasi-mathematical rules that serve for "solid" geology break down altogether or are only casually applicable. Even that most general of geological rules, that of two superposed strata the lower must be the older, becomes dangerous, not that it ceases to be true but that it is easy to misapply it. If, for instance, we are in an area where drift is negligible, and we find limestone at the top of a hill, sandy strata on the way down and clay towards the bottom (as we often may), we naturally infer that the limestone is the youngest and the clay the oldest of the three, because we *assume* superposition though probably we do not actually see it. But when we come to an area where we see clay at the top of the hill, chalk on the valley sides and gravel at the bottom, if we infer that the chalk was intermediate in age to the other two we should be wrong, for the clay and gravel are both "drift"; the whole region is composed of a thick mass of chalk, with a thin plastering of clay on the high grounds, and a thin plastering of gravel in the valleys. As to the relative ages of the clay and gravel, it is fairly safe to reverse the common rule, and say that the higher must be the older: for the gravel can only have been deposited since the valley was scooped out, and the clay is more likely to have been deposited when the high grounds formed a continuous plateau.

The variability of the drifts and their local and sporadic distribution make it impossible to show them on a small-scale map, and on the earlier one-inch maps even they were almost entirely ignored. This mattered little for the mining districts, for which the maps were first prepared, but it became seriously misleading when, for instance, large areas in East Anglia were coloured as "chalk," although only here and there did chalk come within many feet of the surface. For agricultural purposes, and for the study of the relation of flora to soil, which is important to teachers, drift-maps are essential.

The New London Maps.

Until the present year the student who wished to obtain an authoritative drift-map of the London district on the one-inch scale had to pay the prohibitive price of 30s. for it, and for that received a huge sheet of which he might very likely want only a small part, on a very antiquated topographical basis (*e.g.*, the neighbourhood of Notting Hill appears as the little village named Kensington Gravel Pits). Now, thanks to the enterprise of Mr. Teall and his staff, he can obtain nearly the same amount of information in four convenient-sized sheets at 1s. 6d. each, with modern topographical details. The sheets are uniform in size with the ordinary Ordnance sheets (18 inches by 12), but not identical with them. Their northern and southern boundaries remain unaltered, but the eastern and western ones have been so altered that the meeting point of the four sheets is at Charing Cross instead of at the Blackwall Tunnel.

centre could have been chosen, however
:tory it may seem to those who happen
st outside the limits of the sheets. The
onable cause for regret is that this shift-
: sheet boundaries for London's conveni-
ıs to denote that there is no prospect of
of the adjoining sheets to the east and
ome years to come. If this article should
eye of the Director-General, we would
ı him the great desirability, in educational
of re-mapping the adjoining sheets to the
eigate and Sevenoaks.

run over the sheets in order, starting
south-eastern one. This extends to
ıe, Kingsdown (on the Wrotham Road),
ı and Purley. Here in the south and
have typical chalk country, the higher
ising to the North Downs (not reached on
) covered with brick-earth and clay-with-
th many beech-woods, while the valleys
are famous for orchids and other chalk-
wers. Farther north are scattered patches
t sand, which call to the mind visions of
tens' nests in railway cuttings, and the
lens of Swanley. In the centre is the
tch of Eocene pebble-beds, to which the
d commons of Blackheath, Bostal Heath,
nd Shirley owe their existence, with
outliers of London clay, on which the
ıltivated, and the interesting valley-inlier
ıt Chislehurst.

g to the south-western sheet, we find a
The chalk is seen only in the extreme
t, near Sutton. A broad area of un-
g London clay extends from Richmond
Epsom, and then in the south-west follow
r of patches of Bagshot beds, which
he sandy heaths and pine-woods of Esher,
e's Hill and Woking. The main portion
ıeet, however, is occupied by the great
ts of the Thames, extending from Chertsey
ıes by Hounslow and Hampton Court to

The gravels are covered here and there
ɜs of river loam or brick earth, and it is
deposits of Pleistocene age, not on the
London clay, that the brick-fields of
's Bush, Southall and other places on
: Western Railway have sprung up. This
worth mention, as the contrary is often
g., in Mr. Arnold-Forster's reading book,
eat City "). The terraced arrangement of
nes gravels is not obvious on this map,
more apparent in those of the Wandle,
n be traced on this and the south-eastern
n Wandsworth not only to Croydon, but
usually dry valley (now, after last year's
:upied by a bourne) to Purley. An unfor-
istake in this sheet must be noted—in
:rn part of it, a number of narrow areas of
:lay have been coloured as though they
olwich and Reading beds.

f the north-western sheet is occupied by
ı expanse of London clay of Middlesex,
m monotony by inliers of Woolwich and
beds near Pinner and Ruislip, and out-
liers of plateau gravel as at Stanmore Heath, of Bagshot sands at Harrow, Hampstead Heath and Highgate, and of glacial deposits (boulder clay and gravel) at Finchley. All these variations make their mark on the vegetation, cultivation and human settlement, until the great sea of London sweeps over and obliterates them. In the north-west, around Rickmansworth, the chalk appears, not as in Kent in a broad expanse, but only on the valley sides, with gravels both on the high ground and on the valley bottom.

The north-eastern sheet shows us the great stretch of Thames gravels from London to Ockendon, the Lea gravels up to Enfield, the London clay and high-level gravels of Epping Forest, and the boulder clay and Bagshot outliers of the country towards Brentwood and Ongar.

Thus each sheet has its own characteristics, and the variety of scenery and soil around London is brought home to us.

The Use of the Maps.

These maps are primarily useful in connection with outdoor work—the wider aspects of nature-study. To the teacher they are full of suggestions for possible country walks and what to look for in the course of them. The presentation of them to the scholar requires some discretion. A genuine understanding of an ordinary map must precede any attempt to understand the geological map. The first step is to take two sharply contrasted soils—let us say Hampstead Heath and the ground around (including Parliament Hill and Golder's Hill), the former with its pine trees and gorse, remains of old sand-pits, which give the Spaniards road the appearance of being embanked, dry, sandy soil, with deep gullies after heavy rains; the latter with ponds and little streams, a different vegetation, and a tendency to muddiness in wet weather. Here are differences plainly observable, and they are seen to be shown on the map by a difference of colour. That is the first broad notion to be got; but a further step may be taken if the return walk passes a point where the transition from sand to clay can be easily seen.[1] Let the class be set to find out for itself when the change comes, and then see that the boundary line drawn on the map actually runs through this point. This will arouse eagerness to find the junction on some other road another day; very likely only disappointment may result, and this will afford an insight into the difficulties of making an accurate geological map. It is easy to put a splash of green colour to mark the sandy Heath, but to draw an accurate boundary around it is a different matter. In using the geological map we avail ourselves of the work of an expert who has, after years of experience, learned how to draw inferences from obscure facts, and who has also had at his disposal much information inaccessible to us. We must be satisfied if we can verify his accuracy at particularly easy points here and there.

Wherever we can examine a hill like that of

[1] In the case of Hampstead this can be best seen in the footpath that leads from the upper end of Frognal down to Redington Road.

Hampstead, or many others around London, where sandy or gravelly beds come at the top and clay below, the observation of the different behaviour of rain falling on the two may lead us to another step in the understanding of the map. We gradually discover that water may be got from the sands by sinking wells into them, and that natural springs occur here and there along the line of junction between sand and clay. Thus we come to the important notion that *the clay underlies the sands* in the interior of the hill. The boundary line now comes to have a new meaning: it is compared with the contour-lines of the hill and seen to correspond roughly with their general course. The teacher must be on his guard not to push his scholars to this conclusion too soon.

Later on, if more extended excursions can be made, a further and more difficult idea may perhaps be arrived at. It will be noticed that, although there are only four main kinds of subsoil around London—chalk, gravel, sand and clay—the map shows about fifteen colours. When two sands or two gravels have been visited which seem exactly alike, it will be noticed that they are coloured differently on the map. Perhaps, if samples of the two are examined side by side, some difference in the coarseness of the sand grains or the colour of the pebbles may be found, but this would hardly justify the distinction. If, however, we are able to show that one of these formations runs beneath the London clay while the other rests upon it, we shall be at the starting point of a whole series of new ideas—those of the regular arrangement of strata, and of geological age.

These suggestions will, we hope, indicate what may be done in out-door work with the help of these maps. The wise teacher will adapt his teaching to the resources of his own neighbourhood and his individual tastes. If the latter are botanical, he will lay more stress on the differences of soil as they affect the flora; if they are historical, he will notice how the ancient village sites are determined by the presence of water-bearing strata, the bare clay areas having only become settled in comparatively modern times.

The great advantage of these new maps is that they help the teacher to find out what the resources of his neighbourhood are.

MAPS OF OTHER DISTRICTS.

In addition to London teachers, those of some other districts also now have similar maps available:—

South of England.—The Isle of Wight is published as a special sheet, larger than the ordinary ones, price 2s. 6d. (All others are 1s. 6d.) The adjacent mainland sheets (330-331), and those of Salisbury (298), Ringwood (314), and Chichester (317), are published; and there is a reasonable expectation that before long the same will be true of the whole of Hants, East Dorset, Devizes, South Wiltshire, and the Henley part of Oxon.

No part of the south-west is yet published, but here again we may hope soon to have the whole coast from Otterton to Looe, as well as the Land's End sheet.

South Wales.—Six sheets are published, cove the country from the Bristol Channel to the B Mountains of Breconshire, and two more sh are promised, which will carry the area wes Gower and Llanelly.

Midland Counties.—The Stoke-on-Trent she published, and the next one to the north (Macc field) is promised. The Leicester sheet is p lished, and two adjoining sheets to the w including Charnwood Forest and South De shire, are likely to follow.

Ireland.—The Dublin sheet, and a special on the neighbourhood of Belfast, are published.

For some of the sheets descriptive memoirs published at prices varying from 4d. up to 10s. but mostly between 1s. and 2s. For further in mation teachers should consult the official "G logical Survey Catalogue," published annually the Ordnance Survey Office, Southampton, price

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SELECT WORKING LIBRARIES GENERAL HISTORY.

(MEDIAEVAL AND MODERN.)

By J. S. LINDSEY.

THE growing tendency to recognise that study of British History in our schools incomplete unless it is supplemented by study of General History or Universal Histo (either in outline or in "purple patches") has me to think it might be worth while to atten a selection of the books most generally useful the latter purpose. In picking out the books wh I recommend to form the basis of a "work library," I have somewhat abandoned the li adopted in the admirable series of articles or "Teacher's Library," which have appeared these columns, and have followed the plan adop in the "Working Library of British Histor which has been prepared for the second volu (and its constituent parts) of my "Problems Exercises in British History" (Cambridge, H fer). That is to say, my selection is based on double principle of classifying the select bo not only according to their *subject-matter*, but a to their *degree of utility*. I have considered only the intrinsic value of the books themsel but also the probable differences in the needs resources of the users.

The following lists of books are primarily c piled with a view to help the student and teac of history in selecting books for his own libra but they would also form a useful portion o working school-library. They do not pretend be exhaustive, but simply to give the books wh combine, in a peculiar degree, the merits of be *constantly useful* and *comparatively cheap*. M excellent books named in the bibliographies nar below are excluded from notice here either beca they appeal mainly to special students or beca

* A forcible plea for the inclusion of General History in our s curriculum was made by Mr. W. M. Child in the April, 1901, issue of SCHOOL WORLD.

they are more suitable for a single reading than for constant reference. This will account for the absence of many classics, both in narrative and in essay form.

The lists are arranged in three groups, dealing respectively with general, mediaeval, and modern history. Each of these groups is further arranged in three divisions, consisting respectively of necessary, desirable, and ideal books. The "desirable" and "necessary" books are arranged in parallel columns; and, as a rule, there is some connection between the entries on the same line. The "necessary" and the "desirable" books together cost somewhat less than £20; and for the benefit of those whose needs or means are limited, a small number of books have been further distinguished by asterisks as suitable for a "Minimum Library" (costing about £2). For further guidance in the choice of more detailed books the student or teacher is referred to the helpful select book-lists in the undermentioned works of G. B. Adams, H. E. Bourne, G. P. Fisher, G. P. Gooch, P. V. N. Myers, &c. The last-named is the most recent and the most helpful to students; Mr. Gooch caters for more advanced needs; while the historical specialist will have recourse to M. Langlois' "Bibliographie Historique."

In the choice of text-books it has been thought well to select in each group books by different authors and as different as possible in design: the student will thus have the advantage of comparing at least two distinct selections of facts and methods of grouping them.

No provision has been made for books dealing with ecclesiastical, literary, and æsthetic history; nor for books dealing with particular countries, towns, and persons. This has further involved the almost complete exclusion of sources. These gaps may be most readily filled by selections from some of the following historical series :—

(i.) SPECIAL TOPICS.		s.	d
Epochs of Modern History (19 vols.)	Longmans, each	2	6
Epochs of Church History (15 vols.)	Longmans, each	2	6
Eras of the Christian Church (10 vols.)	Clark, each	6	0
Story of the Nations (60 vols., *etc.*)	Unwin, each	5	0
Great Peoples (*In progress*)	Heinemann, each	6	0
Cambridge Historical Series (*In progress*)	Clay, each	4 0 to	6 0
Mediæval Towns (*In progress*) ...	Dent, each, *net*	3 6 to	4 6
Historic Towns (11 vols.) ...	Longmans, each	3	6
Nineteenth Century Series (25 vols.)	Chambers, each, *net*	5	0

(ii.) BIOGRAPHIES.			
Heroes of the Nations (35 vols., *etc.*)	Putnam, each	5	0
Heroes of the Reformation (10 vols.)	Putnam, each	6	0
The World's Epoch-Makers (*In progress*)	Clark, each	3	0
Foreign Statesmen (*In progress*)	Macmillan, each	2	6
[Also various National Series.]			

(iii.) SOURCES.		
Translations and Reprints (31 parts, *etc.*)	Penns. Univ.	10 to 25 cts.
Old South Leaflets (126 numbers, *etc.*)	Boston, Mass. Old South Work, each	5 cts.
American History Leaflets (35 numbers, *etc.*)	Lovell, ea.	10 cts.
Bohn's Antiquarian Library (35 vols.)	Bell, each	5 0
[Also various National Series.]		

I.—GENERAL HISTORY.

A.—NECESSARY BOOKS.

(i.) General Manuals.

	s.	d.
*FREEMAN, E. A. *General Sketch of European History* Macmillan	3	6
*ADAMS, G. B. *European History.* Macmillan, *net*	6	6
*PUTZGER, F. W. *Historischer Schulatlas* (2 m. 70 pf.) Velhagen, *net*	3	0
*PLOETZ-TILLINGHAST. *Epitome of History, Ancient, Mediaeval, and Modern* ... . Blackie	7	6
GEORGE, H. B. *Genealogical Tables* ... Frowde	7	6

(ii.) Special Subjects.

LAVISSE, E. *Vue générale de l'histoire politique de l'Europe.* [3 fr. 50 c.] ... ... Colin. *net*	3	6
*GEORGE, H. B. *Relations of Geography and History.* Frowde	4	6
PATRICK-GROOME. *Biographical Dictionary.* Chambers	10	6
*JENKS, E. *Prim of Politics* ... ... Dent, *net*	1	0
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BOOK IN THE TEACHING OF SCIENCE.

spread revival of interest in educa- recent years has resulted in many ɨ, some of them desirable and indi- l improvement on former methods of ers of doubtful value and represen- ɔf an innate desire on the part of the ·ith the reforming passion to effect ɪ, in the hope that perchance it may y to a more effective system of

ny years ago that school instruction synonymous with the elaboration of ɪeans of which the student could in norise—even if only over the ordeal ɛamination—the contents of a con- dealing with the rudiments of the vidual performance of experimental ɨ was none. To the ordinary student much a subject based on authority ɔgy a hundred years since. And saddening reflection, it is true that of science, owing to regulations of ent department charged with the of the affairs of the schools in which ɪstruction in science was given, re- ·ork of teaching science as the means, securing an income rather than as ɾain citizens with the power to see judge justly, and to reason intel-

the priests of science a few were to had not bowed the knee to Baal. ɪed with the true spirit of science to ld have been the inculcation of the ɨarch, the habit of testing all state- periment, regarded callously as a ntaining a balance at their bankers' rs entrusted with so responsible a .ve been to begin with disheartening ls productive of a determination to ɪme change at whatever cost.

ɪers, on whose verdicts the incomes ɨ depended, reported continually that ɔf candidates showed that a large em came to the examination with answers to likely questions duly memory, and that if inadvertently ɪttempt a question to which they ɪave no cut-and-dried solution the rly always failure of a complete kind. s of the day were, if the reformers' be taken literally, little more than of possible examination answers, ly of any literary grace but charac- inimum of grammatical accuracy.

urprising, therefore, that when the ɪn to preach their crusade one of the hey pronounced to be Anathema ɪs the Text-book. Unfortunately, fferentiation of books was attempted. l in class were termed "text-books" and all were condemned equally. The result, like that in many similar instances, was the dissemination of an equally grave error of an opposite kind. All books, good, bad, and indifferent, were pronounced out of place in the teaching of science, whatever the experience and qualifications of the teacher might happen to be.

One of the most prominent of the reformers, whose efforts have brought about many of the improvements of recent years in the teaching of science in this country, has countenanced, it would appear, this indiscriminate condemnation of text-books:—

"I notice that it is customary in University Extension courses to preface the syllabus—itself an invention of the enemy—with a list of text-books. To those about to begin the study of science, I would, however, say in the words of *Punch*—Don't! don't look at a text-book: avoid most of them as you would poison. Their methods are as a rule detestable and destructive of all honest effort towards development of powers of self-helpfulness; the worst offenders usually being such as are written by those who have 'felt a want' in connection with some particular examination."[1]

The same authority in another place says:—

"Having used the word text-book, let me point out that no text-book must ever be allowed in classes such as are under discussion. Each child should write its own text-book and be taught to regard it as a holy possession. The notes of the work must be most carefully written out, at first as a draft but eventually as neatly as possible, in the form of a connected story—not split up into paragraphs, please, by ruled lines."[1]

To appreciate most easily the unwisdom of this wholesale condemnation it is necessary only to recapitulate the conditions under which instruction in science is given in the better secondary schools of to-day; and in the following remarks every effort has been made to avoid exaggeration. The master of chemistry or physics—and though the reformers will say that such a division of the science taught in schools in this way is absurd, it is still found necessary in most schools—is most commonly responsible for the instruction in his subject throughout the school. With the exception of at the most half-a-dozen "free-periods" in the week, such a master has a succession of classes either in the laboratory or in the lecture room. In the laboratory he has somehow to keep, say, five-and-twenty boys occupied with experimental work for an hour and a half. Each set of boys comes to him twice a week for a practical lesson and perhaps once a week for a "lecture."

Now, what does this mean in the absence of a good text-book? In the laboratory lesson the boys have to be instructed as to what the work for the day is to be, and such an introductory admonition by the master absorbs some fifteen or twenty minutes of the time which should be

1 "The Teaching of Scientific Method and other Papers on Education." By Prof. Armstrong, F.R.S. (Macmillan.)

devoted to experiment, to say nothing of the further time taken up in making the dull boy understand subsequently what the majority of the boys picked up in the preliminary talk. Nor is this the only discount to be subtracted from the time available for practical work. There is the boy's first draft of what is to become his "holy possession," in more prosaic language his laboratory notes have to be written up. Surely the hour and a half of practical work becomes in this way something under an hour? Then, too, there is the "lecture." It is necessary for the master, by skilful questioning or in some other way, to elicit what is precisely the significance of the results of the practical work, and by judicious demonstration to supplement the laboratory exercises so that the boys may have a rational and more or less complete idea of the study, or "research" if the word is preferred. In order that the master may know if the work is being understood and the boy may have a record of the work he has done, so that as occasion arises he may refresh his memory, an account, written "as neatly as possible," of the lecture must be written by each boy. Thus the poor master has for each boy to read, revise and supplement each week the accounts of two laboratory lessons and one lecture. It is not difficult to calculate how many exercises per week have to be corrected if the master is responsible, say, for six classes of twenty-five each and each class comes to him three times in that interval. Those readers who have had experience of examining will be able to form some idea of what the revision of some 450 books each week means, and they will begin to marvel that the teaching is as good as it is in schools where the "no text-book doctrine" has been embraced.

But human nature being what it is, it is but natural to find what inspectors report continually. The laboratory note-books are not satisfactorily corrected, the lecture notes are by no means complete and accurate. The result is more serious than at first appears, for the prevailing practice in schools of the kind where the heresy under discussion is adopted is to set boys as a home-work exercise to commit to memory the "holy possession" they have, their incomplete and inaccurate accounts of their work. The adherence to a plausible theory leads in this manner to the dissemination of error and the inculcation of wrong ideas as to the accuracy required in science.

The fact is that the advocates of the "no text-book doctrine" fall into a mistake common with educational reformers—Herbart and Rousseau are good instances—of prescribing for class-work what they have found to be efficacious when dealing with an individual in the capacity of private tutor. If more of the writers on education had served an apprenticeship as masters in a school, thereby becoming acquainted with the actual conditions of class-room teaching, there would be far fewer fanciful theories to pervert and confuse young persons imbued with the pedagogic passion.

The text-book, of course, dates from the time of the discovery of the art of printing. Before that date the only source of information was, for m students, the spoken word of the master, and was natural that the young neophyte should stri to get down in writing what exactly he had hear The introduction of printing abolished the neces sity for long and wearisome journeys previousl necessary to come into contact with the knowledg the student considered necessary for his comple education.

The virtue of the spoken word would, in fac seem to be much exaggerated by the reformer In the case of the "lecture" there seems no reas why the master of his subject should not, throug the agency of printing, address a multitude. the laboratory it is difficult to appreciate the diffe ence between a printed laboratory manual and t written instructions, duplicated by all sorts processes, which appear to be permitted even laboratories regulated by the "no text-boo doctrine."

Though the reformers will probably not appr ciate the fact, they are in this matter of the co demnation of the text-book as much glorifyin mediæval methods as the humanists in their insist ence upon the unique efficacy of Latin and Gree as sources of culture. The text-book had no plac in the teaching of the Middle Ages because th printed book was yet to come. To hear a lectur from the master of a subject is one thing; to read mark and inwardly digest the contents of th lecture when one has it in a printed form is quit another.

Why, too, should there be any objection to th circulation in a printed form of the instructior with which students in a laboratory must b familiar before attempting to perform their e perimental exercises? On the contrary, all th advantage seems to be in the opposite directio The instructions of a good, experienced teache even if they are given by means of the printe page, are surely better than those of the ill-prepare untrained teacher, though the latter are conveye by word of mouth—and such instructions the must be in the ordinary laboratory.

In other words, the introduction into an ordina laboratory of a good book of practical exercises generally the substitution of a well-reasoned cour of work by a good teacher of experience for t immature and ill-arranged attempts of a beginn in the work of instruction in practical scienc Similarly, the intelligently written and logical arranged manual produced by the true teach with the faculty of expression provides a means which the aspiring student may correct and ampl his lecture-notes, without in any way minimisi those good effects which believers and unbeliev in text-books alike desire to see following t teaching of science.

Briefly, there are so many ways in which t science master may encourage and inspire h pupils that he cannot afford to allow his strengt and energy to be absorbed by useless work i attempting to supply unsatisfactorily what a goo text-book can provide not only more adequatel but with much less trouble.

THE TRAINING OF SECONDARY-SCHOOL TEACHERS AT THE UNIVERSITIES.

X.—THE UNIVERSITY OF GLASGOW.

UNTIL last year no attempt was made in the University of Glasgow to supply a full course of practical training to undergraduates who were studying with a view to the teaching profession. Previous to that the University had been content to give them theoretical instruction in the class of education and to establish a diploma in education, the examination for which covered both theory and practice, and demanded as a preliminary requisite at least five months' practical training in a recognised training college. Honours graduates were eligible to compete for the diploma with distinction, which involves, in addition to the above, a searching examination, theoretical and practical, of their ability to teach the subjects comprised in their special group. This diploma also qualifies for registration under the Board of Education Act, 1899, section 4.

This plan worked well so far as it went, but all the time it was recognised that it was no more than a makeshift, and that the usefulness of the university ought to be extended so far as to give systematic and direct practice in the art of teaching. This became all the more necessary as the training colleges, whose best students have for some years received the major part of their instruction at the university, gradually became congested. Accordingly, the university at the beginning of last session accepted the responsibility of providing a full course of training. This course is given in accordance with the regulations of the Scotch Education Department, who pay grants of £30 in respect of every female student, and £35 for every male—provided the total sum so given is not more than the working expenses of the scheme. The Board of Management, or "Local Committee for the Training of Teachers" as it is called, is chosen by the university authorities. The majority of the members are drawn from the University Court and the Senate and University staff. The others are representative of the Glasgow and West of Scotland Technical College, the Church of Scotland Training College, the United Free Church Training College, the Roman Catholic Training College, the Educational Institute of Scotland, and the School Boards of Glasgow and Govan.

The scheme provides for the training both of graduates and of non-graduates. The course of study extends over three winter and two summer sessions. Students are expected to enter upon the course in the first year of their university attendance, but those who have already attended university classes for graduation may be accepted, subject to the approval of the Scotch Education Department, and in their case the period of training will be as nearly as possible coterminous with the completion of the degree course. For graduates a one-year's course will, as a rule, be deemed sufficient.

Students trained under this scheme are recognised as certificated teachers by the Scotch Education Department, without further examination. They must follow a course of study leading to graduation, but the obtaining of a degree is not a necessary condition of receiving a certificate. Candidates for admission must be not less than eighteen years of age on the 1st of October previous to their acceptance, and must have passed the whole Preliminary examination in arts or science, or its equivalent. No fees are charged from such students as sign a declaration to the effect that it is their intention to become teachers in state-aided schools. From others a fee of £5 per session is exacted. All students must pay the fees of the ordinary university classes. Those who require aid in the prosecution of their studies may obtain maintenance allowances of not more than £20 per annum. They may also have their university fees paid by the Carnegie Trust.

The course of study embraces, in addition to classes qualifying for graduation, such professional subjects as are necessary for the practical training of teachers.

The university classes as a rule are taken according to the following scheme:—

1st year.—Latin and mathematics.

2nd year.—Logic, education, and one of the following: French, German, chemistry, history.

3rd year.—English literature and natural philosophy.

These classes are attended during the winter sessions. In addition to the seven subjects required for graduation, students are strongly recommended to attend the class of moral philosophy and take the diploma in education. Those who have already begun their university course, or who intend to graduate in science or with honours, may substitute special courses for the above, subject to the approval of the Committee and of the Scotch Education Department. Preliminary courses in English, natural science, and physical science are taken during the summer sessions. Where possible, the regular university summer classes in these sciences are attended, the committee in this case paying the fees.

The extra-university subjects are taught by a special staff of teachers chosen by the committee. This staff consists of a director, who is also lecturer on education in the university; a master of method, a mistress of method, and lecturers on music, drawing and kindred subjects, physical training, needlework, practical science and nature study generally, history, geography, phonetics, &c. The time-table is carefully adjusted in relation to attendance at the university classes, so as to make a minimum demand upon the time of the students during the ordinary university winter session. The practical work is a special feature of the scheme, an average of six hours per week during the whole course being required. Six schools are set apart for this work under the direction of the master of method, and it is intended that the students get

all their "crictical" work in classes of not more than twenty-five. The schools chosen include a higher-grade school and a high school. Visits of observation are another prominent feature of the scheme. For this purpose the School Boards of Glasgow and Govan have placed all their schools at the disposal of the Committee. Students will thus have an opportunity of seeing school work in its various forms, and will get a working knowledge of the best methods of organisation and classification. Reports will be asked from the students, and discussions will be held from time to time on the main questions arising out of these reports. It is further intended that every student shall have, at least twice during the course of training, a fortnight of continuous all-day practice in the schools. The third year of the course will be devoted mainly to secondary work and a special study will be made of the newest methods of teaching its various branches. An endeavour will also be made to interest the student in the chief educational problems of the day.

FAULTY DICTION IN ENGLISH.

THE encouragement now being given to the teaching of English in schools must meet with the approval of every student of literature. The language is to be studied as a living organism, the structure and growth of which are to be guarded carefully from all degrading influences. In the currency of our speech, we should be careful not to let our coinage become debased. New words and new expressions must often be accepted, but there should be a desire to dishonour the false phrases which continually are being presented. There are several books, among them being those mentioned below,[1] which will convince the student that the English language is a rich possession that should be kept undefiled; and others describe common errors and defects in its use. From some of these works the collection of incorrect or doubtful expressions here given has been obtained. In a few cases, it may be thought that the objections to words and phrases are fantastic; but even if this is conceded, it must be pointed out that the position taken is occupied by the leading literary journals. Whatever may be thought of the reasons for rejection and exclusion, the compilation may be worth consideration in its relation to lessons in English composition.

Little can be said in justification of the use of the split infinitive. Such expressions as "to at once cheerfully give" or "to, if it were possible, still more confirm us in our resolve" stand self-condemned, but many writers who would naturally avoid these cumbrous phrases would not hesitate to use the inelegant constructions "to seriously consider" and "to clearly see." A sufficient reason for avoiding this custom of placing an adverb or adverbial phrase between the "to" and the verb itself is that the best authors seldom do it. No editor with fine literary instincts approves the use of the split infinitive in his columns, and we have to go to prospectuses, advertisements, second-rate newspapers and third-rate novels, for instances of this objectionable habit. It is possible that, in a few cases, the interpolation of the adverb may add to the force or clearness of a clause, but usually nothing is gained by separating the verb from its attendant particle. Thus, though split infinitives are not actually ungrammatical, they are not sanctioned by good literature, and are both unnecessary and inelegant, so that writers who desire to cultivate good style in composition would do well to avoid them entirely.

It is a common blunder to use "and which" incorrectly. Generally, either the pronoun or the conjunction can be omitted, or the former is misplaced. Thus, in "these scenes, *which* are painful to see, *and which* occur every day," the second *which* is not required; and in "these scenes, painful to witness, *and which* occur every day," the conjunction is intrusive. When, however, entirely distinct statements are expressed by the two clauses, or the cases are different, the relative may be repeated. An example of the first kind is presented by the sentence, "The results, which substantiate my earlier views, and which I will describe"; for one clause has its verb "substantiate" in the present tense, while the other has its verb "describe" in the future. "And which" is also used correctly in the sentence, "His Majesty's self-sacrifice on behalf of his country, which he rules so well, and which esteems him so highly, is beyond all praise." Here the word "which" occurs in two different cases, the first "which" being object of the verb "rules" and the second subject of the verb "esteems."

None is a contraction of "not one," but it is also used in the sense of "not any," and can therefore be followed by either a singular or a plural verb. The singular verb is more effective than the plural in such a sentence as "There is *none* that doeth good; no, not one"; but the plural verb is correct in "*none* of the birds have left their nests." The concord must in fact depend upon the sense in which the word "none" is used; for, though the word was originally singular, a plural meaning now equally belongs to it.

The word *circumstances* literally means "things that stand around;" there is thus an inconsistency in the expression "*under* the circumstances," but use has sanctioned this phrase. In such a sentence as "When men are happy *in* their circumstances, they are naturally enemies to innovation," the preposition *in* is obviously the right word, and the use of *in* instead of *under* in all circumstances is above criticism, if nothing more. The stylists who prefer "in the circumstances" should, however, be consistent, and not write "in the *following* circum-

[1] "Words and their Ways in English Speech." By J. B. Greenhough and G. L. Kittredge. 5s. net.
"The Making of English." By H. Bradley. 4s. 6d.
"Errors in English Composition." By J. C. Nesfield. 3s. 6d.
"Notes on the Composition of Scientific Papers." By T. Clifford Allbutt. (Macmillan.) 3s. net.

' or "in my *then* circumstances," for both splay an awkward misuse of words.
vord *reliable* has few friends, its formation egular, and its meaning the same as *trust-* There are many other words—*laughable*, nple—which are open to the same objection round of loose formation, but while these ated "reliable" is not recognised by many is worthy of a place in an English vocabu- ome authors make the distinction of apply- vord "reliable" to things or statements, ustworthy" to persons, but as so many literature object entirely to the word, and, *Times* and numerous literary journals will nit its use in their pages, the word should led by writers not strong enough to esta- y authority.
hrase "these sort of things" is common in colloquial language, but a glance at it ient to recognise its inaccuracy. There "this sort of thing," or "these sorts of but the combination of a singular noun adjective in the plural is obviously wrong, a wonder the blunder has found currency eople who like to speak correctly.
st is of American origin, and is not accepted *e*, the leading journal of science, or by *The* "Men of science," as a rule, prefer to be d as such or as investigators, though the hrase is cumbrous and the latter suggests l Yard or Mr. Sherlock Holmes.
' should not be used for *first*, but *secondly dly*, &c., are correct. "Different *to*" and nt *than*," instead of "different *from*," are but indefensible errors, whether they occur h or writing. "*Quite* good," "quite large," number," and "quite a few," are Ameri- which are best avoided. The modern *quite* as a substitute for *yes* in England, has, y enough, not been adopted in the United *Last*, which denotes position, should not in the sense of *latest*, which denotes time. the latest (not last) report of the Board of
To refer to extraordinary or wonderful s *phenomenal* is to adopt inept journalese. is unwanted, while we have such words as t, coast, strand, beach, coast-line and shore, xpress the same meaning. It is better to tention to a matter than to *call* attention *Scarcely* is often a better word to use than nd is always correctly employed in ex- quantity, as in "the boywas scarcely a m me." The use of the verb *transpire*, in e of "to happen or take place," is common ewspaper reporters, but this perversion of is severely censured by literary critics. d is, however, correctly used in expressing rom secrecy or becoming public, as in "the of the cabinet soon transpired."
uld be possible to add many other words ases to the foregoing collection, but this is place for a longer list. If the compilation in any teachers the desire to cultivate good the use of words, and to avoid the jargon alese, it will serve a useful purpose.

TRAINING FOR BUSINESS.[1]

THE problem of how best to train the youth destined to engage in our national business of shop-keeping is still the most pressing problem of English education. The men concerned with the distribution of manufactured goods, and the raw materials from which these are produced, require—the advocates of commercial education continually urge—a preliminary education which throughout has in view the needs of mercantile pursuits; a school education, too, which aims to imbue boys with the idea that trade may be as honourable, and be governed by ethical standards as exalted, as any other form of human activity, even if in the past it has been recognised as "professional."

Education, especially secondary education, in England has, if the judgment of American and Continental educationists may be trusted, been largely useless to commercial men because of the predominant classical character which has been given to it; because, moreover, it has had the effect of unduly glorifying the so-called professions and of belittling commercial enterprises of all kinds by disposing of them in a contemptuous manner as being concerned with "trade," and consequently unworthy the serious attention of gentlemen.

There is, however, we are glad to know, a reaction setting in against this narrow, mediæval view, and secondary schools—like University College School, for example—are demonstrating the possibility of educating English middle-class boys in a liberal manner, and, at the same time, ensuring that they shall become familiar with those subjects without a knowledge of which they are of little use in a business house. And this is being accomplished without in any way sacrificing that development of intelligence, initiative, enterprise, and energy which is primarily essential.

We are in complete sympathy with Dr. Herrick in the claims he makes on behalf of commerce, and agree with him that for success it requires men as highly trained, as well-educated, and of as good character as any other walk in life. We commend to schoolmasters this interesting volume—representing as it does a dozen years of investigating and writing—with its accounts of the experiments made in America, Germany, France, and this country, with a view to devise a complete system of commercial education suitably graded and adequate to the needs of business employés of all ranks. The book teems with ideas useful to those who desire to see English education become less bookish and more in harmony with the practical needs of the day.

Landmarks of European History. By E. H. M'Dougall. x. + 303 pp. (Blackie.) 3*s*. 6*d*.—Written under the limitations of a syllabus of which the author does not approve, this little book is a good summary of most of the leading events in European history, from the growth of Rome to the present day. There are four coloured and a dozen other maps and an index.

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[1] "Meaning and Practice of Commercial Education." By Cheesman A. Herrick. xiv. + 378 pp. (New York: The Macmillan Company.) 5*s*. net.

EDUCATION IN SOUTH AFRICA.

By W. HOSKYNS-ABRAHALL.

THE report of the Director of Education for the Transvaal and the Orange River Colony just issued (Esson and Perkins, Johannesburg) gives an account of three years' work in education unique in its kind, embracing as it does the work in the concentration camps and the history of the formation of a new educational system. There is a pleasant ring of sincerity in the kindliness of Mr. Sargant's tone towards the Boers. He dwells on the charm of the Dutch children, on the courtesy and amenableness of the farmers, and he enlivens his report with touches of friendly humour.

Before the war, education in the Orange Free State was conducted in five classes of schools, under local committees. School buildings were inadequate, teachers poor in attainments, and about half the children of the State uneducated. In the Transvaal there was only one class of school recognised; the teaching was poor and the inspection superficial. This led finally to the formation of the Witwatersrand Council, which founded schools, and assisted others on the Witwatersrand, for children hitherto entirely neglected.

The war, while breaking up the general course of school teaching, in some ways served the cause of education. The report gives an account of the progress of the camp schools, which soon outgrew the supply of teachers in South Africa, and necessitated the invitation of others from oversea. Three hundred teachers came out on this service, and in these unprecedented surroundings thousands of pupils received instruction, the maximum being reached in May, 1902, when 29,279 children were being taught in camp—a larger number than had been receiving school instruction at any one time in the two States before.

The Director's admirable address to a conference of teachers at Johannesburg in July, 1902, marks the transition from school life in camp to school life restored to town and country. Alongside the rebuilding and reopening of town schools proceeded the work of re-forming country schools as fast as the return of the farmers permitted. The hardships of the country teacher's life, "with weather-beaten bell-tents pitched near to some unroofed farmhouse," "with no companionship except that of the few neighbouring land-boers and their families," all distraught and discouraged, contrast sadly with the interest of life in camp.

With regard to country schools in the Orange River Colony, resolutions passed at the Headteachers' Conference (Bloemfontein, December, 1903) advocate the establishment of schools at points half-way between the towns, which commonly lie thirty or forty miles apart. Such "central ward" schools would prepare scholars for the third and fourth standards of examination—more advanced scholars being drafted by means of State aid to town schools, or receiving bursaries to high schools, if unusually promising. Children in the more remote districts are to be taught in farm schools. For the present, instruction in government schools is free; the Director advises the postponement of compulsion.

An interesting part of the report is concerned with the relations between free government schools and those of a higher grade. The petitions of local committees reveal considerable differences in public opinion as to the kinds of schools desired in each locality. It appears, however, that the main tendency is towards making the educational system one throughout the school population. So far as teachers are concerned, the social distinctions, so much to be regretted here, are non-existent.

Anticipating a provision of the Public Education Ordinances of the new colonies, a commission was appointed in 1902 to enquire into the subject of technical education. The outcome of their report is the proposal to found a great technological institute outside Johannesburg, which, in addition to an agricultural and to an advanced technical education, should furnish university teaching in science and arts. Mr. Sargant's comments on these proposals show how well-defined are the views of the leaders of educational thought in these colonies. The foundations of this new university are now being laid, and a further plan aims at developing a teaching university for the Orange River Colony from the higher department of Grey College at Bloemfontein, where the faculty of arts will predominate.

In close connection with these centres of university teaching are the normal schools, started in both colonies immediately upon the declaration of peace. They fulfilled their immediate purpose by doing away with the evils of the pupil-teacher system; but in an address to teachers at Durban the Director of Education projects for them a more extended use—to serve as "staff colleges to which teachers of experience should have the opportunity to return for higher professional training and research." His scheme is based on a threefold classification of teachers, each advance in class requiring a return, after a period of school work, to the normal school for further training. But the scheme embraces more than this. "There must be a rallying-point in South Africa, preferably in connection with a university, for the best of South African teachers; there must be a rallying-point in the centre of the British colonies for the chief educators in the whole of our Empire." And in the Director's ideal a teacher prepares for his second-class certificate at a colonial federal college, and completes his training at a great central college for teachers in London. This scheme, original as it is, appears eminently practicable; it is finely Imperialist, and, animated by the vigour which evidently characterises South African educational effort, should, if carried out, form a chief factor in the consolidation not only of South Africa, but of the British Empire.

We have less sympathy with a suggestion to found oversea settlements from our own public schools and colleges. The public school ideal does not include much intellectual strenuousness; while in the matter of games and of tone we must profess to have sufficient faith in the Afrikander to believe he can do without us. Is he behind the average Englishman of William of Wykeham's day?

Turning now to the schools themselves, we find in the Orange River Colony a somewhat new system of classification—town schools of sufficient size being divided into a lower and an upper school, without distinction of sex. The lower school embraces six grades; the upper, six divisions, of which the fourth reaches Standard VII., the fifth and sixth doing more advanced work. Ideally the lower school has a headmistress, the upper a headmaster; the headmistress herself is in charge of the youngest class. No part of the report is better worth pondering than the passages dealing with the treatment of the very young, with the necessity for small numbers in class, and the effect of placing such classes in the hands of mature teachers.

The scientific spirit evinced throughout the report causes one to wonder somewhat at the neglect of a splendid opportunity in drawing up the syllabus of instruction. Education is still based on the old foundation of the three R's, instead of on science *i.e.*, on observation and experiment. Bible history, English Dutch and arithmetic are taught to babes, but not "Nature Study"; and science, in spite of the exceptional opportunities afforded by a new country, is not taught at all except on the recommendation of an inspector. Four schemes are given in full. That for arithmetic is especially good in the practice of rapid estimation of numbers by sight and of weights by hand. Excellent, too, is the drawing syllabus, but the geo-

graphy scheme is open to some criticism. To take one instance: "orientation" as such is wholly absent.

It is impossible to touch on many interesting questions with which the report is concerned, such as religious teaching, language, native education, and others, but one word may be said with regard to secondary education. The distinction between primary and secondary education being mainly a social one, is determined at bottom by difference in the estimation of the teachers; for what public consideration makes of the teachers, that, in the end, public consideration makes of the school. If the tendencies not obscurely indicated in this report develop themselves, the distinction will be obliterated, and secondary education will become simply the continuation, in cases where it is desired, of a primary education common to all the white child population of these colonies. The children of European descent will then form one people, of like ideals and equal opportunities, and their teachers will form one body also. In so young, vigorous, and untrammelled a country such a prospect is one of signal hope, calculated to rouse to the full the zeal and the energies of the teacher, all the more because he may further count himself happy in serving under men whose enthusiasm and freshness of thought are equal to their practical ability, and who so evidently realise what possibilities for the future are forming beneath the temporary difficulty and depression in the present affairs of the Transvaal and the Orange River Colony.

THE BERNE INTERNATIONAL CONGRESS ON THE TEACHING OF DRAWING.

MORE than eight hundred members met at Berne early in August to exchange ideas on the subject of the teaching of drawing. Since the first congress held at Paris in 1900 much progress has been made, especially from the point of view of the educational value of the subject. Arbitrary copying from flat copies is almost a thing of the past, and it is the mental training in observation which just now is insisted upon on all sides. Careful training of teachers of all grades, whether to become drawing specialists or to teach drawing with other class subjects, is now considered necessary; and this training, it is urged, should develop and preserve life and vigour of expression, and seek to draw from the child its individual creative faculties.

From the exhibition of work by scholars and students in training much was to be learned. The princely equipment and appliances for the little ones in some American schools almost aroused envy among many teachers, who, having the same aims as their highly-favoured comrades, felt themselves sorely hampered by lack of funds and also insufficient teaching staff.

Dr. Diem, of St. Gallen, Switzerland, showed the results of his teaching of memory drawing in which he simplified the forms to ensure a definite mental image by showing them in silhouette by means of the lantern. Leaves pressed between two glasses gave a mass of definite shape undisturbed by detail. The examples led up to figures in motion, while the elements of perspective and foreshortening were taught by lantern views carefully chosen from views in the neighbourhood of the school.

Among secondary work that done by the boys of the Realschule at Kladno, Bohemia, under Herr Bouda, was of great interest to the English party. About sixteen folio volumes of bound drawings illustrated the life and power of the teaching. Birds and animals drawn either with brush, pencil, or pen from stuffed specimens and from life, touched in freely and directly, often in bodycolour on tinted paper—details of parts and various positions being closely studied. Landscape was also dealt with, evidently as a class subject, and the interesting treatment of groups of factory chimneys showed that the teacher has inspired his pupils to look for beauty, and to find it even among unpromising surroundings.

The American school-work was interesting as showing method in the teaching of design, but it seemed more strikingly attractive at the first glance than was revealed by a second visit. It gave evidence, however, of much competent teaching.

The English exhibit attracted a certain amount of interest and attention, although it was but small and not very representative, being drawn almost entirely from London. It showed gradation from the elementary work in the King Alfred and University College preparatory schools, L.C.C. primary schools and secondary schools subsidised by them—such as the S. Martin's School, Lewisham Grammar School for girls, Archbishop Tenison's School for boys, Owen's School, to the higher secondary work in schools of the Girls' Public Day School Co., and at Harrow, while there was a highly appreciated small collection of work from the L.C.C. Central School of Arts and Crafts.

Work by student-teachers was shown by Herr Elssner, of Dresden, with good note-book sketches of animals taken at the Zoological Gardens. Prof. Kunzfeld, of Vienna, encouraged his students in water colours freely blotted on—two studies often being made from the same object, the first in the mass of the local colour of the thing, just leaving the high lights, and the second a complete rendering in colours and light and shade of the object. Background was, however, ignored. Prof. Churchill showed some refined life-drawing from students of the Teachers' College, Columbia University, and also good still-life work.

The more important resolutions passed by the Congress were based on the principle that the whole course of instruction should follow the law of rational development in the child. That drawing should be to the child a means of impression and the expression of its own thought, and, therefore, have a place throughout the whole school curriculum. As the subject had to be treated internationally, general principles only could be laid down, rather than any set method. Throughout elementary education, drawing must be taught on a sound basis; it should be evolutionary, remembering that the child is the future man and not a little man; it should be realistic, seeking inspiration from all natural forms; spontaneous, that it may become as ready a mode of expression as writing; æsthetic, that a care for all that is beautiful be fostered in the child. In secondary education the same principles were advanced, and the artistic faculty should be more strongly brought out. It was also held that no method of art training is complete without some form of manual training or modelling. For the training of students to become teachers, thorough practice in the actual art work should be supplemented by adequate preparation in psychology and the science of education.

As in other congresses, a great gain to each individual member lay in the interchange of ideas with regard to method and equipment. All seemed alive to the educational value of drawing from its mental side, which, until recently, has been almost entirely ignored. In Mr. Cooke's few words he showed that the spirit of Pestalozzi was still the guiding light for the teacher of drawing, and the same idea was uppermost in the closing speech of Herr Fritschi, the president of the first section.

The president of the congress was Herr Boos-Jegher, president of the Swiss Society of Art Masters, while M. Léon Genoud, who had the lion's share of the work in preparation beforehand, presided over the second section treating of

technical and professional training. They, with Herr Fritschi and the Swiss organising committee, deserve the warmest thanks of all the members for the admirable way in which their comfort and enjoyment were assured. The work of the committee was exceedingly arduous, but the programme was carried through without a hitch. The weather being gloriously fine, the excursions to Fribourg and Interlaken were both delightful.

The small English party numbering about forty was received throughout with great cordiality. The Board of Education and the Scotch Education Department were represented, and various societies sent delegates. After discussion with the American section it was resolved, if possible, to hold the next congress in London, four years hence.

To gather up the threads of the work of the congress, a Federation has been called into being with three delegates chosen from each country. These delegates will act as channels of communication, and the central office will be at Berne. Those selected for Great Britain are Mr. Francis Black, Headmaster of the L.C.C. Camden School of Art; Mr. John Young, Art Master of Montrose; and Miss Ethel M. Spiller, Art Mistress of Dulwich High School. The work will need to be thorough, and should help towards the improvement of the teaching of drawing on broad educational and artistic lines.

MUTUAL RECOGNITION OF UNIVERSITY EXAMINATIONS.

THE Council of the Senate of the University of Cambridge have for some time had under consideration the establishment, in conjunction with the Universities of Oxford and London, of a system of mutual recognition of examinations. The Council believe that the establishment of such a system of mutual recognition is of great importance in the interest of secondary education throughout the country, since it will diminish the number of distinct examinations for which schoolmasters have to prepare their pupils. The Council are further of opinion that it is greatly to the interest of students of Cambridge University that when they have passed examinations equivalent to the Previous Examination, they should not be required to spend time in preparing for the Previous Examination itself.

The Council now recommend that a student who has passed the examination in the stated subjects at Oxford Responsions—that is in Greek, Latin, arithmetic, and either elementary algebra or in elementary geometry—be entitled to exemption from Part I. of the Previous Examination; and that a student who has passed in French or German as an additional subject at Responsions be entitled to exemption from the additional subjects of the Previous Examination.

The possession of an Oxford Senior Local Certificate shall, it is recommended, carry exemption in the following circumstances. A student holding such a certificate shall be exempted from Part I. of the Previous Examination, provided that in the Local Examination he has shown sufficient merit in Latin and Greek to be qualified in these subjects for exemption from the examination in the stated subjects at Responsions, and also has satisfied the examiners in the paper on a book of the New Testament. An Oxford Senior Local Certificate shall excuse from Part II. of the Previous provided the certificate includes arithmetic, geometry, algebra, higher geometry, two divisions of the religious knowledge section, and English languageand literature (including the English essay); and shall exempt further from the additional subjects of the Previous provided it shows the student to have sufficient merit in French or German to be excused from the examination in an additional subject at Responsions, or that the holder has passed in applied mathematics and one other division of the higher mathematical section.

A student who has passed the London Matriculation shall be, it is recommended, entitled to exemption from Part I. of the Previous with the exception of the paper on the Greek Gospel or its substitute, provided his certificate includes Latin and Greek. Should the matriculation certificate include elementary mathematics, logic, and English, the student is to be entitled to exemption from Part II. of the Previous; but should the certificate include elementary mathematics and English only, exemption from Part II. of the Previous may be claimed except in Paley's "Evidences," or its substitute, logic. If French, or German, or mechanics was taken at matriculation the student may be excused the examination in additional subjects at the Previous.

In addition to the above particulars, the *Cambridge University Reporter* contains full information as to the conditions under which it is proposed that the Previous and the higher examination of the Oxford and Cambridge Schools Examination Board should give exemption from the London Matriculation and the Cambridge Senior Local exemption from Oxford Responsions and from London Matriculation.

SUGGESTIONS FOR NATURE-STUDY.[1]

ANY development of nature teaching in the schools finds an easy starting-point in the object-lesson. But the object must be present if the lesson is to be real. If the elephant can only be represented by a picture, that is a reason for giving lessons about something else until it is possible to adjourn to a menagerie. Where flowers or stones are required, let them be provided in sufficient quantity to give every child a specimen. Let these be distributed at once, so that the children may start with their own observations. This will require training, and the teacher will spend much time in discussing what is seen with the children.

A good way of ensuring that children really do observe is to ask them to make drawings from the specimens in front of them. Drawings can be corrected more rapidly by the teacher than written accounts; but written accounts should also be asked for. Whilst the drawing is being done there ought not to be any sketch on the blackboard which would serve as a guide.

Several teachers of repute have recently drawn attention to the cycle of the seasons as the best ruling idea for the arrangement of any scheme of nature lessons. There can be no better guarantee that the teaching really will be based on observation and experiment. In summer there is endless material. In winter it is more difficult to realise the opportunities of the moment; but the long nights favour astronomy, the bare earth suggests geology, the weather is always a source of anxiety, the frost without and fire within suggest lessons on heat and cold. As much as possible of the summer botany course should be unloaded upon the earliest weeks of spring whilst twigs are bare.

For younger children the topic for the object-lesson may very well be chosen from week to week, and may depend simply on what is most available; for the upper standards teachers will rightly wish to plan some more systematic course. But this plan should retain some elasticity in order to fit with the season. If the different stages of the opening chestnut bud are to be watched, they must be seized almost to a day, and yet one year

[1] Abridged from an interim report to a Committee of the Educational Science Section of the British Association.

· may open a fortnight before or after their date on the pre-
s year.

he study of the living plant from the experimental side may
egarded as suitable for elementary schools. It satisfies the
wing important requirements :—

.) It can be made experimental, and most of the experi-
its are such as can be repeated by the pupils. The experi-
its are often of a continuous character, and afford some
ing in measurement and recording. It is wise to emphasise
quantitative side of many of the experiments.

i.) The subject forms a connected series of lessons, the later
k developing originally out of the earlier.

ii.) The experimental teaching in school is easily linked to
outdoor life of field and hedgerow with which country chil-
ı are familiar. Again, it is illustrated readily by practical
nples drawn from the work on the garden and on the farm,
hat the children learn that school work may have a bearing
heir after life.

While plant life forms a very generally suitable indoor subject
elementary schools, there should be a good deal of flexibility
ut the nature of the accompanying outdoor work. With
e teachers gardening, with others field botany or geology,
is the accompaniment. The teacher should be encouraged
levelop a speciality according to his own tastes and the
ntages or restrictions of his locality. Thus for a school
ng osier beds the natural history of the willow is an
irable subject.

is now within the power of all elementary teachers to take
school out of doors for a lesson and to count it in the time-
:. Inspectors are sympathetic, and it is frequently done.

very syllabus that includes the shadow of a stick at noon or
nightly turning of the Great Bear about the Pole prescribes
:s which it may be impossible to treat practically in lessons
at 2.30 in the afternoon. But this is just the reason why
routine of school work may be broken suitably to allow
ren to witness exceptional natural phenomena—a great
, a high tide, or an eclipse of the sun—phenomena whose
i of occurrence are not within our control.

schools which possess a garden much can be done by the
ren in it. Simple experiments in assimilation, pollination,
ng, &c., can be tried. Where classification is studied the
ng of order beds by the children is a great assistance.
ı it is impossible to work in a garden, experiments may be
d on in window-boxes.

cursions should be made to lanes and fields at all times of
:ar. Even in towns it is possible to study the branching of
and unfolding of buds and to become familiar with the
:s of different trees in winter, spring, and summer.

give definiteness to out-door work some questions to
swered may be set before starting a walk, and answers
n written out afterwards.

se who are not naturalists by hobby may do much to
age children by giving their moral support to the simple
ts of the wayside. Children may be encouraged to bring
ties with them to school. Many schools now have a rack
·les to receive wild flowers picked on the way to school ;
: reserved for nature notes, where the first scholar who
swallow may enter the fact. Pots of growing seedlings
cupy the window-sills. Aquariums are always interesting,
caterpillar cage might be tried.

collecting instinct is sufficiently strong at the ages we are
sing. The collector is often a naturalist in embryo ; he is
>re to be led judiciously into the paths of progress. In
ı directions—notably birds-nesting—restraint more than
ragement may seem necessary ; but numerous recent books
ated by photographs of birds' nests show the possibility of
·ng children to watch without destroying. The general line is to wean a boy gently from mere collecting to collecting with a purpose ; to collecting and observing, and then to the collection of observations in a note-book kept for the purpose. Collecting is a great help to accuracy of observation, and the boy who brings back a collection of pebbles from the seashore or of grasses from a hayfield will know far more about what he carries in his hand than a schoolfellow who has never troubled to pick up anything. Children may be encouraged to try how many different sorts of wild roses they can find along a country lane, and to write notes on their differences.

The collecting instinct is a great motive power, if rightly directed. It should be used to solve special problems. And if prizes are offered, they need not be for the largest or best collection of wild flowers, but for collections illustrating insect pollination, or seed dispersal, or climbing plants.

Some serious defects which have been noticed in nature-study teaching as at present conducted are :—

(i.) An attempt is made to cover too much ground, hence experiments and measurements are shirked because they take time and involve preparation on the part of the teacher. Experiments are described instead of performed, and a drawing on the blackboard takes the place of realities. This is the commonest and most vicious defect in such teaching.

(ii.) Unsuitable subjects are often taken, especially with the idea of being practical. It is of no use to dictate notes on hay-making to a class when there is no opportunity of seeing the process carried out.

(iii.) On the other hand, there is a great lack of system. A lesson on opening buds is followed by one on tadpoles or on the motions of the moon. The topics are all in season in March, but for upper standards we think the course should become more systematic.

(iv.) When a definite course is chosen it is often overloaded with classification. The teacher seems to have the fear of a possible examiner before him, and is afraid to omit anything. Science is too often supposed to consist of big words. "Amaryllis, fruit, a bilocular loculicidal inferior capsule" need not appear in the notebook of a boy of thirteen.

HISTORY AND CURRENT EVENTS.

SOME of our readers may have tried to understand from the papers the meaning of the Lippe-Detmold case, which is again attracting attention in Germany. The matter is complicated, and we do not propose to explain it. Lippe-Detmold is a principality, one of the twenty-five sovereign states the federal union of which makes the German Empire. It is situated not far from the town of Hanover, and consists of 469 square miles, with a population of 130,000. It has one representative among the fifty-eight in the Bundesrath, and one among the 400 of the Reichstag, the two institutions which correspond to the Senate and House of Representatives of the United States Congress. The succession question now discussed will probably be settled without war. Yet it was just such succession questions, involving eternal lawsuits among the 250 princes of Germany, that made the confusion of the seventeenth and eighteenth centuries in the Holy Roman Empire. Some of the greater ones then led to war, such as the Silesian question, the Austrian succession, the Bavarian question, and made a noise in history, till they were swept away by the Napoleonic and succeeding revolutions. We are apt, because of the greatness of Prussia, to forget that most of the States that make up Germany are just such small survivals of the middle ages as this Principality of Lippe.

THE Archbishop of Canterbury has been an honoured guest in the United States of America this autumn. He has visited Boston in the company of the Bishop of Massachusetts. Yet there was a time, not two hundred years ago, when the inhabitants of what is now the United States would have nothing to do with bishops. One of the first recorded acts in the history of Massachusetts is the forced repatriation of two episcopalians who were regarded as undesirable immigrants. Not only congregational New England and quaker Pennsylvania, but even episcopalian Virginia, would have nothing to do with bishops from England, whether proposed by Wesley or by Sherlock, the imperialist Bishop of London about 1760. They were afraid that submission to ecclesiastical government would tend to a similar submission to lay control beyond what they were prepared to accept, and it was not till lay independence was finally secured that bishops of any kind were known in the United States.

CURRENT French history is profoundly interesting to us just now. It is helping us, by way of contrast and comparison, to understand not only our present education controversy, but our ancient history too. We see in France to-day, as in the mediæval church everywhere, the triangular duel between State, Pope, and local clergy. We can realise, from the present action of not merely non-Catholics but Catholics in France, how Henry VIII. of England and Ireland could break with the Pope, yet remain anti-Lutheran in doctrine. There are so many conflicting explanations of the reasons for the action of the French Republican Government that it is impossible to be sure about it all, but it seems that France cares no longer to be "the eldest son of the Church." Does she, therefore, regret the fact that Hlodwig the Frank was the first "barbarian" to decide against Arius in the fifth century? And is her recent intervention in China on behalf of murdered Belgian priests to be the last instance of the French protectorate of Catholics in Near and Far East? The connection between these two questions illustrates the unity of history.

A DIRECT bi-monthly steamship service between Tréport and Dublin has been established, and the newspapers remark that this service places the two countries in direct communication for the first time. The statement is no doubt correct in the sense in which it is meant. But we seem to remember other occasions on which France and Ireland have been "in direct communication." Ever since the mismanagement of the English Reformation set England and Ireland in conflict over religious questions, first Spain, and afterwards France, were for long in communication with England's "back door." Never with success, it is true; but the name of Smerwick recalls an ugly story in Elizabeth's reign, and was there not an Irish regiment in French pay during the wars of Louis XIV.? During the eighteenth century Irishmen migrated to the Bourbon countries, and sometimes rose to distinction, so that their names, appearing in French or Spanish history, puzzle the unwary—*e.g.*, Wall in Spain. And finally, during the wars of the French Revolution, did not Hoche and others think they could use Irish discontent to establish an Irish republic, and so harass England? But "there is now an *entente cordiale*, and these quarrels are of the past." *Il n'y a plus de Manche.* Let us hope so.

IN Sunderland that is, in the neighbourhood of Jarrow and Wearmouth, where the Venerable Bede lived and died in the seventh and eighth centuries—they have been erecting a cross in memory of that great Englishman who wrote our earliest history and translated the Scriptures. The movement was inspired by the erection of a monument to Caedmon the poet of the same age. And thus we are reminded of that England which existed on the coasts of the North Sea till Danes destroyed its civilisation. It was a brilliant but brief period, which not only taught Karl the Great and his Frankish court, but gave a name to the language spoken even by the Saxons of the south. Alfred, King of the West Saxons in the next generation, called his language English, and his grandson, wanting to give a name to the now united Danes and Saxons, called the nation English too. Nay, so permanent has this word English become, because it is the name of the "predominant partner," that Scotland, Wales, and Ireland are ignored except in quite official and pedantic expressions, and this kingdom is still called English, though the Empire is "British," whatever that may mean.

ITEMS OF INTEREST.

GENERAL.

ALL of us who study education read Mr. Page's letters to *The Times* with interest and profit. There is little chance of misunderstanding Mr. Page when he discusses a problem in connection with schools or with the work of teachers. His language is forcible, and his facts are, as a rule, trustworthy. In his recent letters to *The Times* on the registration of teachers, he makes three main statements — (1) That there is a serious dearth of good secondary teachers; (2) that the conditions of registration tend further to check the supply; (3) that they serve no useful purpose. "In the judgment of most able and experienced teachers this process of training," says Mr. Page, "must almost always be a comedy, and is at present a farce," and he endeavours, in his usual bantering style, by indicating what may conceivably be the result of training when the student in training is particularly inane and the trainers particularly futile, to cast ridicule upon the whole idea of training secondary teachers.

BUT surely there is nothing farcical in the idea of training a teacher for his work? Practitioners of other learned professions are trained. Or is it that the processes of training in vogue to-day constitute the farce? If this is so, it would clearly be more remunerative labour for talented men of experience to tackle the business of discovering a reasonable method by which the tragedy, shall we say, of the first term's, or in some cases first year's, work of an untrained master may be avoided. A proper method of training in the hands of capable trainers should be able to place teachers beginning their career in possession of methods elaborated and proved by "able and experienced teachers." It seems unnecessary for every teacher to learn by bitter personal experience what the veteran regards as the commonplaces of the class-room. If education is an experimental science, it is hard that masters can have no means of starting their life's work possessed of the results at which other workers have arrived: if it is an art, it is equally hard that no facilities can be offered for the practice of preliminary exercises designed to prevent the sacrifice of young boys and girls upon whom the untrained teacher must otherwise practise. It will be possible eventually to train teachers satisfactorily, and the training of to-day, experimental and incomplete as it is, is a great deal better than nothing. The methods of training of some future time will meet with the approval of all the "able and experienced teachers" of that distant day, and will be the outcome of experiments carried out by many teachers in schools of many grades through many years.

IT will be agreed by all who know anything of education in this country that the advantages which the nation ought to

erive from its system of elementary education are greatly dis-ounted by the fact that the evening continuation schools catch o few of the pupils who leave the primary schools. The reso-ution moved by Mr. Waddington and discussed at length at he recent meeting of the Association of Education Committees will serve a useful purpose in directing attention to this important ubject. Mr. Waddington thinks, and many educationists will ot only agree but wish ultimately to go farther, that the time as arrived when it is necessary to secure the compulsory ttendance at a recognised evening continuation school of all hildren who do not continue as whole-day scholars up to the ge of 15 years, and that such compulsion should be for a period f two years for every one year the child ceases to be a whole-lay scholar between the ages of 11 and 15. The idea of ompulsory attendance at an evening school, though new to English people, is familiar enough in continental countries. We look forward to the re-introduction next Session of a Bill rawn on the lines of that introduced last Session by the Bishop of Hereford in the House of Lords. To obtain something like full value for the national expenditure on elementary education ome steps in the directions indicated are imperative.

AT the recent annual distribution of prizes in connection with he Swindon and North Wilts Technical School, Sir William nson, Parliamentary Secretary to the Board of Education, elivered an address. During the course of his remarks Sir William Anson said he would like to remind those who do not ways find educational affairs going on as they wish, that this is ot the fault of the people at the present time, it is the fault to me extent of the way in which our educational system has own up largely uncared for by the State. Voluntary agencies epped in consequently, and when the State came to deal with e matter in a comprehensive way there had been already fficient piecemeal legislation to have created authorities with nflicting interests, authorities which had been working out eir own scheme of education in their own localities. Now at education has been brought under one authority in each ea, some forbearance is due to those who have spent time, ought, and money on education on their own lines, and now d themselves either superseded or brought into line by a w local education authority.

AT the Church Congress held last month in Liverpool Sir nry Hibbert read a paper on secondary education. During course he remarked that up to quite recently the grammar ool was the stepping-stone to the university, and to nowhere e. Though Latin ought to be a compulsory subject in every ondary school, it is desirable, said Sir Henry Hibbert, that pupils be enabled to pursue more specialised courses of truction—classical, scientific, or commercial—selected with iew to their respective future avocations. The growing dis-tent with the defective commercial education of our youths ering upon a commercial career, he continued, will never be edied until merchants insist—(1) upon the presentation of a ing certificate from our schools, and (2) discontinue employ-boys at the early age of 14. There are, Sir Henry thinks, causes of weakness in our secondary-school system—(1) the ning of teachers to teach, and (2) the duration of the holi-. Every endeavour, we are told, must be made to provide best training for those who intend to be teachers. The old that a teacher "is born not made" is not applicable to hing any more than any other profession, and the duration ie holidays in our secondary schools is neither more nor less a public scandal. What will teachers in secondary schools to say to the last of these expressions of opinion?

HE fourteenth annual conference of the National Federation ssistant-teachers in elementary schools was held on September 24th in Liverpool. The new president, Mr. E. C. Pritchard, of Birmingham, delivered his address. After discussing the Education Act, 1902, and referring to theological tests, Mr. Pritchard dealt with the present supply of teachers for elementary schools. The supply of qualified teachers, he said, is found to be utterly insufficient; in London alone 2,000 certificated teachers are required to bring the non-provided up to the level of the Council schools. Even to-day many thousands of our boys and girls are being taught by boy and girl pupil-teachers who in mind and character are barely a stage of development in advance of their pupils. Of the adult teachers in primary schools there are 17,588 who have undergone no preparation for their exacting task—young women who have not necessarily reached any standard of education, who have not the faintest pretension to any professional training, and are employed solely on account of their cheapness. Although education is extolled on all sides, the feeling still remains, continued Mr. Pritchard, that it must be run on economical lines; but can it be economy to bring up half the children under conditions that must result in stunted mental growth? Besides the difficulty of attracting teachers there is the still greater one of retaining them. In a few years after the completion of their training, teachers, realising the nature of their prospects, seek other fields of activity where character and ability are more generously recognised.

THE City of London College opened its fifty-seventh session on October 3rd with the inauguration of a great scheme of commercial education. A day clerical commercial school is to be opened, and later on a higher commercial school will be established. In the evening classes the work will be systematised, and courses extending over two or three years will be commenced in banking and insurance for accountants, for surveyors, and for those engaged in merchants' offices. A school of modern languages will be opened, and not only will French German, Spanish, Portuguese, and Dutch languages be taught, but in French and German persons who are actually engaged in commerce will give instruction in the business methods and commercial and mercantile institutions of France and Germany. The City of London College is acting in conjunction with the London Chamber of Commerce, the whole of whose teaching work will be conducted at the college.

SPECIAL interest attached to the biennial meeting, in June last, of the Guild of Cheltenham Ladies' College, inasmuch as the College attains its Jubilee this year. The re-union last summer was, both in numbers and interest, the most successful that has ever taken place. There are close upon 2,000 members on the Guild roll, and of these 880 attended. Fourteen years ago the Guild presented a dramatised version of Tennyson's "Princess," which struck the keynote of the series, the general aim of which is to entertain as well as to edify. On the present occasion Chaucer's "Clerk's Tale" ("The Historie of Patient Grisel") was chosen for dramatic representation, and the performance gave universal satisfaction. It has been decided to postpone the College Jubilee celebration till next spring, in order to combine with it the opening of the new science wing, which is not yet completed.

THE London Chamber of Commerce recently drew the attention of the Board of Education to the following resolution passed by the Manufacturers' Section:—"That, in order to retain our industrial position, and to introduce into this country such further industries as may be profitably developed, this section is of opinion that it is absolutely necessary to raise the standard and, if possible, cheapen the cost of technical and higher technical education, and that representations be made to the Board of Education in this sense." In a covering letter, it

was pointed out that the scientific aspect of every branch of manufacture has hitherto received inadequate consideration by manufacturers, although almost every industry would benefit by a general employment of native qualified scientific assistants. Adequate facilities for such training should be provided in this country by the establishment of technical colleges of university type, where students—always provided that their general and scientific education is sufficiently broad—could have opportunities of carrying out research work.

THE Board of Education replied, assuring the Chamber of Commerce of their sympathy with the desire to provide facilities for higher technical education. The Board of Education have recently instituted a special branch of their administration with the express purpose of encouraging such a movement. The powers of the local authorities have been widened in this respect, and there is reason to believe that, so far as they are concerned, the wishes of the Chamber of Commerce will materialise. The country is already well provided with facilities for technical instruction in its lower grades; indeed, so numerous are they that they have tended to overshadow any claims for higher technical instruction, though that is an "inexorable necessity." The Board of Education, however, deprecate any substantial improvement in this direction until manufacturers show themselves willing to employ scientific assistants of the type indicated. Hitherto the salaries offered to such persons have been too low to tempt natives of this country, whilst foreigners are willing to come temporarily at a low salary, in order to gain such knowledge as will enable them, on their return to their own country, to apply it to their own advantage in industrial pursuits.

WITH regard to the means by which higher technical education is to be established, the Board of Education emphasise the necessity of a preliminary "broad foundation of general culture" laid by the secondary school curriculum, but express a doubt as to whether the time has yet arrived for the establishment of higher technical institutions. As yet, the number of students both willing and well enough prepared to take advantage of such facilities for higher technical education as already exist is most inadequate—a deficiency which, it is to be hoped, may be remedied soon. A noticeable point in the reply of the Board of Education is the inclusion of agriculture among the industries which cannot fail to benefit by the introduction of methods based on scientific study and research. "Our great national industry of agriculture" is one of the phrases used in this connection.

THE morning paper in French set at the London Matriculation in September last was a mixture of very difficult and very easy matter. Although the vocabulary was not difficult, the first piece of translation into English was particularly hard, owing to its philosophic outlook on art. We have known easier pieces set for the pass B.A. in recent years. The selection was taken from a book of travels by the Baron de Fromentin, which we recollect was one of the set books at the Cambridge Previous some years back. The second piece (in verse) was as easy as the other was difficult. Few could have missed its sense, although a word here and there might have been unknown; *e.g.*, *cutre*, *affaissé*, *haletante*. The translation into French was taken from Goldsmith, but had no eighteenth-century peculiarities of style or diction. A candidate who had been well prepared ought to have made a respectable French version of it. The first two grammar questions were easy; the other three would present many unexpected difficulties to those unacquainted with colloquial phrases; *e.g.*, "That's just it," and "It is very refreshing after working the whole week through in the city." We note one innovation—the last question is given in French: "*Faites en français des phrases complètes en réponse aux questions suivantes*:—(*a*) *Qu'appelle-t-on le bassin d'une rivière?* (*b*) *Quelle est la différence entre une île et un lac?* (*c*) *Définir un glacier et une rivière.*" We hope this is but a thin edge of the wedge, and that in time all the questions will be set in French.

THE Board of Education have approved the regulation framed by the Consultative Committee modifying the regulations for the formation and keeping of the Register of Teachers. It is now provided that a person shall be entitled to be placed on column B of the Register of Teachers if he satisfies the registration authority that he fulfils the conditions set forth in regulation 3; or if he applies at any time within *four* years from the establishment of the registration authority to be placed on Column B of the register, and satisfies the registration authority that he fulfils the conditions set forth in regulation 4.

THE London Education Committee has received from the Board of Education an intimation that the Board is prepared to approve of certain schools as free evening schools during the present session. The Board of Education also state that of late it has been necessary to exercise pressure to induce managers to charge fees to students of evening schools, and experience has tended to confirm the view that a charge of the kind is in the best interests of education. The Board realise, however, that in certain poor districts the adoption of the fee-charging system requires to be introduced gradually, and, indeed, in a small number of cases is still inadvisable. The Board add that, subject to the foregoing facts being borne in mind, the case of particular schools may be left largely to the discretion of the Committee.

WE learn, from the Report of the Board of Education for the year 1903-4 which has now been published, that the rapid progress made throughout the country, during last year, in bringing into operation the Education Act of 1902, has been continued, and is now practically complete. On August 1st, 1904, the Act had come into operation in the area of every Local Education Authority, with the exception of three counties, two boroughs and one urban district, and even in the case of these six authorities the appointed days have been fixed, and the Act will come into operation by the end of September. As the result of this rapid application of the provisions of the new Act, the number of authorities responsible for the local organisation of elementary education has been reduced to 328 in the place of nearly 800 school attendance committees and over 2,500 school-boards.

THE same report states that it has as yet been impossible, owing to the great pressure of other work, for the Board of Education to initiate a systematic inquiry into the manner in which endowments held for purposes of elementary education have been applied since the Education Act, 1902, came into operation or will be applied under agreements made between trustees and local authorities. The Board have, however, expressed readiness to assist local authorities by making a systematic examination of proposed apportionments and by discussing in conference with the parties interested the effect of the section in doubtful cases. The Board hope, however, that in the course of the current year all local authorities will have made substantial progress in this department of their administration.

SEVERAL additions and alterations have been made in the "syllabuses and lists of apparatus applicable to schools and classes other than elementary," for the session 1904-5, now published by the Board of Education. In the science section a new subject, called the Elementary Science of Common Life, has been added. The syllabus provided to indicate what is to be the

new subject follows much the same lines as those of iene, Section I., which was removed, unfortunately, rs thought, from the Directory a few years ago. of work outlined in the added syllabus should prove he higher forms of schools for girls, providing as it s of lessons illustrating fundamental principles of d physics, and showing their relation to everyday The second part of the publication contains llabuses of subjects in which the Board do not hold s, but which are suitable for study in evening con- sses. These subjects are varied in character, and hat are in the least likely to be taught to evening attending science classes.

owing public schools have adopted the Common for entrance to public schools:—Aldenham, Bed- eld, Brighton, Charterhouse, Cheltenham, Clifton, Dover, Durham, Epsom, Felsted, Giggleswick, Haileybury, Ipswich, Malvern, Marlborough, Radley, gby, St. Bees, Sedbergh, Tonbridge, Westminster, King's School). Boys entered for the Lent Term, of these schools will be examined under the scheme r 22nd and 23rd.

nformed by the Secretary of the Natal Education that Mr. P. A. Barnett is returning immediately to resume his work with the Board of Education after ffice of Superintendent of Education for Natal for ough the Natal Government was willing to increase 's salary considerably if he could consent to remain e of the colony. The following letter, handsomely nd enclosed in a morocco case, bearing the Natal ed in solid gold, has been handed to Mr. Barnett:— the eve of your departure from Natal, the Govern- s to express its regret that you have decided to our appointment upon the termination of the period u were seconded by the English Education Depart- vice in this colony. Owing to your untiring efforts, years have witnessed a great improvement in the condition of the colony. Your unique experience, ability, and sound judgment, together with your owledge of mankind, have enabled you most suc- overcome the many difficulties incidental to the former. In the name of the Government, I have to deep appreciation of your work, and to wish you rnett many years of health, happiness, and pro- gned) THOS. WATT, *Minister of Education.*"

t Commencement exercises at Columbia University completion of a century and a half since the foun- ing's College. At the opening of the one hundred t year of Columbia's career, the teaching staff is ever before. The number of professors has been n more rapidly than the number of students. years ago a single professor gave instruction in history, and in political economy, as well as in moral philosophy. At the present time at least rs are engaged in what was then the work of one. of a new School of Mines is now in progress, and meeting the trustees passed a vote of thanks to Mr. isohn for his gift of £50,000, which made this de- ossible.

nsvaal Government has just had a windfall in the e gift to the colony by Mr. Alfred Beit of his d Farm. This estate, supposed to be worth at 00, has been handed over to the authorities for purposes, and no doubt the importance of the gift will be readily appreciated in a country like the Transvaal, where the employment of scientific methods to agriculture and to mining cannot fail to have a very far-reaching effect.

WE have received a specimen school pen—the Carnegie—from Messrs. MacNiven and Cameron, Ltd. It is made in two grades, M and F. The M pen is an excellent one. It writes freely and firmly, and is particularly pleasant in the up strokes, owing to its careful tempering. The F pen is finer. It makes clear strokes, which are free from ragged edges, and does not catch on a common paper with a rough surface. Both pens can be recommended.

WE have received from the secretary of the Craft School at Bethnal Green copies of two pamphlets. One is a catalogue of an exhibit at the St. Louis Exhibition, 1904, with a brief account of the school, and the other contains illustrations of craft-school work, and is intended to accompany the former publication. The pamphlets show that excellent work is being done by the pupils of the school.

AFTER being associated with Eton College for more than forty years, Dr. Warre has notified his intention of relinquishing the post of headmaster at midsummer next.

MR. J. L. HOLLAND has been appointed secretary of the Northamptonshire Education Committee.

SCOTTISH.

THE report on secondary education in Scotland, already referred to in last month's issue, shows that 19,090 candidates were presented for Leaving Certificates in separate subjects as against 19,509 last year. The number of separate papers worked by these candidates was 59,875, as against 60,815 last year. The decrease in the number of presentations is doubtless due to the repeated warnings of the Department against premature presentation. Their lordships are still dissatisfied with the number of utterly worthless papers sent in, and threaten in this report to single out those schools which show no discrimination in the presentation of candidates, and refuse to admit them to the examination until they are prepared to adopt more reasonable views. Group Leaving Certificates have been issued to 398 candidates, and Intermediate certificates to 750. These numbers, representing the merest fraction of pupils in secondary schools, are extremely disappointing, and seem to prove either that the requirements for the certificates are far too exacting for the great majority of the pupils, or that the attainments of the scholars in secondary schools in Scotland are exceedingly unsatisfactory.

THE Senate of London University has agreed to accept the Scotch Leaving Certificate in lieu of their matriculation examination, provided that the candidate has passed in the Higher or Honours grade in all the subjects required by the regulations for the matriculation examination *on one and the same occasion.*

THE annual meeting of the Educational Institute of Scotland was held in the Royal High School, Edinburgh, last month. The interest in the proceedings seems to be steadily increasing, the assembly hall being packed from beginning to end of the meeting. It is pleasing to be able to congratulate the Association on the steady growth in its membership, and on the manifest vitality that characterises all its activities. Last year 1,323 new members were added, and the Institute seems within measurable distance of the time when it will embrace within its fold all the teachers of Scotland. Mr. James Young, Biggar High School, was elected president for the ensuing year.

MR. THOMAS WALLACE, High School, Inverness, in his retiring presidential address, said that the abandonment of the Education Bill had been received throughout Scotland with general regret. It would be impossible to obtain a Bill more comprehensive in its scope and more liberal and enlightened in its aims. Those interested in Scottish education were under a deep debt of gratitude to Lord Balfour of Burleigh and Mr. Graham Murray for the broad national view they had taken of the whole question. Teachers had special reason for gratitude to the Government, as the Bill recognised many professional claims for which they had been long contending. The one defect in the Bill was that it made no provision for the adequate training of teachers. The present training colleges had done admirable service, but their constitution was an anachronism in the twentieth century. With a national system of education, they should have national training colleges supervised and endowed by the State. When that came about he hoped the needs of Scotland north of the Grampians would not be overlooked. Now that Gaelic was to have a place in the curriculum of training for teachers in Gaelic-speaking districts, no centre could be more appropriate than Inverness for such a training college.

THE Technical Education Committee of Perth County Council have just issued their annual report. From this it appears that there were 206 classes in twenty-two subjects in various parts of the county; 4,000 pupils had been enrolled, and the average attendance was 3,133. At Perth Academy fourteen special classes for teachers had been formed, and the attendance had been most encouraging. For the bursaries offered by the Committee there had been forty-five applicants representative of the different districts of the county.

SIR HENRY CRAIK, in opening a new school at Huntly, said that this was probably the last audience he would address as representing the Scotch Education Department. He confessed to a feeling of disappointment that last session's Education Bill, which had been received everywhere with a chorus of acclamation, had been submerged in the troubled waters of parliamentary discussion. The contrast between the first reception of the Bill and its ultimate fate showed them how great were the difficulties and the pitfalls that surrounded such a question. While he regretted the loss of the Bill, he warned them against expecting too much from legislative efforts. An Education Act would not reconstruct educational science any more than a Public Health Act the science of medicine. The solution of education problems must come from those who had given their life to the study of these questions. The *materia scholastica*, like the *materia medica*, presented a vast group of problems which were gradually ripening. They would not be solved by Acts of Parliament, or by the rough and ready methods of the faddist. They could only be solved by careful study, by watching the results of experiments and by comparing the progress and experience of different nations.

THE second annual meeting of the Scottish Art Teachers' Association was held in the Royal High School, Edinburgh, on the 17th ult. Mr. J. Vaughan, Glasgow, presided over a large attendance, representative of all the districts of Scotland. Proposals were made to establish summer courses for art teachers in Scotland instead of at South Kensington. Considerable divergence of view as to the propriety of this course was brought out, and it was finally agreed to remit it to the Committee for further consideration. Mr. J. Delgatty Dunn, Technical Institute, Dundee, was elected president for the ensuing year.

IRISH.

THE Dublin and Central Irish Branch of the Teach has memorialised the Intermediate Board on three reference to the rules and programme for 1905. It h out that the rule making a two years' course in practic compulsory on all students in 1905, except those t classical course, operated unfairly on students who h previous years been compelled in the Preparatory a Grades to take science as a subject, and the Board h quently decided to add to their rule (9A) that the pro not apply to students of the Middle or Senior Grade i 1905, nor to the students of the Senior Grade in 19 sideration of the other two points has been adjourned question of the rules and programme for 1906 comes l Commissioners. These are in connection with the ad students to the Honours examination in practical instances being known in which the test of the deciding which students should be admitted has op fairly, especially as this test often takes place tw months before the Honours examination, and in c with the exclusion of non-recurring decimals in the course of the Preparatory Grade, it being pointed out are necessary for the practical science course in the sa It has also been decided that students will be allowe the third year's course, as they can the first and seco a second time, if they desire.

THE Dublin Education Society held a meeting in t theatre of the Royal Dublin Society on October 5th, subject for discussion was, "How may a healthy publ on education be created?" The chair was taken by William Crawford, principal of Wesley College. It w that public opinion on education was backward in I compared with England and Scotland, and that it was remain so until education was more widely spread and importance more generally recognised.

THE new Calendar of Dublin University for 1904-5 changes more numerous and affecting a far larger n students than ever before. A new course of universit in military subjects begins this term for Army stud War Office having agreed to offer ten commissions in th or Line and two commissions in the Royal Artillery to of Dublin University. Commissions in the Indian also be given. The rules respecting examinations in t and history of education have been altered by the in of first and second-class certificates. Euclid gives geometry, accompanied by ruler, set square, protr pencil compasses, and a detailed syllabus of the cours obtained on application. All the courses in natural s for sizarships have been changed, and some of the s for natural science have been reduced. Special regul introduced for the benefit of students from the Univer Cape of Good Hope, and a new course with a limit of to 25 is laid down for the two exhibitions of the annu £50 each tenable for four years. This examinatio held in March, and the exhibitions, one of whic reserved for medical students, will be given as the re examination in arts. The university year now begin however, be most memorable for the admission of lectures and examinations, and nearly all other privil equality with men.

THE Department of Agriculture and Technical Inst offering a limited number of commercial scholarshi value of £100 each to young men with a sound gene

some commercial experience in order to enable them approved courses of instruction at some higher institu- a view to their employment as teachers of commercial in Ireland. Two other scholarships, both of £80, are ne to a person in the woollen industry and one to a the leather and tanning industry, to enable them to pproved higher courses of instruction with a view to them for the management of such industries in Ireland.

WELSH.

Welsh National Convention has met, passed resolutions, a result, an official manifesto has been issued. The n (Defaulting Authorities) Act, 1904, is declared to n passed because the councils were unwilling to the "old Church-rate." The manifesto states that by of 1902 "the parson was to appoint the teacher." test against this, against the imposition of a religious e teacher. "The Welsh Coercion Act has but one o compel Welsh councils to re-establish the Church- hat is its sole object." The Act of 1902 is stigmatised est, unjust, and unconstitutional. "Let the people of solve that their children shall not be made slaves to ey for the parson. . . . Stop the children earning nd the Coercion Act can never be administered." The campaign, therefore is: close the Council schools and all the children possible from Church schools. "We en free schools for all children in every town, village hbourhood. These schools will be held in the Non- st chapels and schoolrooms attached thereto. . . . l shall be deprived of educational facilities, and the n imparted will be efficient." The funds will be sup- m voluntary contributions.

is to be said on such a manifesto? Apart from the r points in debate, surely this is a reaction in favour of ism, such as Mr. Auberon Herbert can hardly have , and such as would have delighted the heart of Mr. Spencer. Should circumstances bring about the nt, and should it prove practicable for private persons the funds for a nation's schools, there may be momen- sequences in politics generally, for it is the most spirited gainst State intervention in our times. It is a struggle om, and the declaration of willingness to pay the full full freedom. From the educational point of view, the question may reasonably be asked: Where is the rantee for efficiency in schools brought into existence a manner, and maintained by private agencies. For how can all the sanitary conditions be assured under rrangements?

, as to the teachers? Mr. Lloyd George has his In an interview with the Glamorganshire Federation ers, he said: "For eighteen months we can keep the y schools going. We can pay the salaries and see teachers do not starve in the interregnum. The position ery much that which would be created in the case of a Later on in the interview Mr. Lloyd George claimed Convention practically was fighting the battle of "It will be infinitely better for them to have an end e controversy and to have one national system, placing es in the position of civil servants who are above party arian controversy."

question of pension schemes for teachers has recently scussed by the Montgomeryshire Higher Education ee. The Chief Inspector of the Intermediate Schools, Mr. Owen Owen, stated that eight of the Welsh counties have already joined in the pension scheme, and the question now was whether the authorities should ask the masters and mistresses to join. Mr. Humphreys Owen, M.P., called attention to the important fact that, under the new Education Act, there was power in their hands to give assistance to such a fund as long as they did not exceed a two-penny rate.

THE Carnarvonshire Education Committee has decided to accept an offer from the authorities of the Bettws y Coed Girls' School (a non-provided school) to be handed over to the Committee *on conditions* which include systematic examination of the children in Bible knowledge under the direction of the County Committee. Mr. Allanson Picton made the protest that this meant the Committee committing itself to the teaching and endowment of religion, and the application to the head teacher of a certain religious test. Mr. Picton holds that there should be an absence of all religious tests. The Carnarvonshire Committee draw the line at Bible teaching. So, too, does Mr. Herbert Lewis, M.P., who asked at a recent meeting: "Is the Bible to be the only book excluded from the schools? All present would agree that it would be a monstrous thing on every ground to exclude the Bible from the elementary schools." But if so, may it not be asked: Would it not be a monstrous thing to limit the freedom of the teacher in his teaching of it? Can the country trust the teachers? If so the difficulty of solving the religious question will be enormously reduced.

A WELSH National Conference on the Training of Teachers convened by the University of Wales and the Central Welsh Board is to be held at Shrewsbury on November 10th and 11th. Full particulars can be obtained from Mr. W. Hammond Robinson, Central Welsh Board, Cardiff, who is acting as honorary secretary.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Sainte Beuve, Portrait de Molière. Edited by Dorothea C. Bedford. 36 pp. (Blackie.) 4*d.*—It was a happy thought to issue a selection of passages from Sainte Beuve's admirable *portrait* of Molière. Miss Bedford has written a brief introduction and very good notes, rather more full than is usual in this excellent series; but they give welcome explanations of many literary allusions and materially enhance the value of this volume, which we warmly recommend.

Victor Hugo, Les Burgraves. Edited by H. W. Eve. xl. + 168 pp. (Cambridge University Press.) 2*s.* 6*d.*—It is needless to speak in praise of Mr. Eve's work as an editor; for before we open a book with his name on the cover we are assured of the conscientious and scholarly labour he has devoted to it. There may be some difference of opinion as to the suitability of "Les Burgraves" for class reading; some may see in it a melodrama on a large scale, and may regard it as serving to illustrate some of the less admirable qualities of Victor Hugo's genius. To those who admire the play this edition will be welcome as an admirable guide to its study and interpretation.

Corneille, Horace. Edited by John E. Matzke. xx.+ 144 pp. (Heath.) 1*s.* 6*d.*—This is a very satisfactory edition of one of Corneille's best plays. A good introduction deals with the date of the play, its sources, the three unities, the play, and the characters. The section of Livy dealing with the famous

combat of the Horatii and the Curiatii is given in full, with an English rendering. The text is carefully printed, and the notes give all necessary information, special attention being paid to peculiarities of seventeenth century grammar.

Théophile Gautier, Prose et Vers. Edited by F. B. Kirkman. iii. + 32 pp. (Black.) 6*d.*—We like the brief selection of Gautier's prose and verse which Mr. Kirkman has added to his popular series. The pictures are of varying merit; some of the designs contributed by Lady Chance have good decorative effect. We have noted a few misprints, such as *déjeûné* (p. 3, l. 48); *bohlwerk* (p. 4, note 2); *rève* (p. 12, l. 7); *qu'* for *qui* (p. 19, l. 1); *addresse* (p. 21, l. 75); and we are inclined to doubt the editor's statement in the introduction that Gautier's *Capitaine Fracasse* is well known in English schools.

Le Théâtre à l'Ecole. By Mrs. J. G. Frazer. 20+12+27 pp. (Macmillan.) 1*s.*—There is no doubt that our pupils can derive much benefit from acting short French plays which are at the same time bright and written in good conversational French. Difficulty is often experienced in finding suitable plays, and we have to thank Mrs. Frazer for supplying us with *Ogine d'Estrées*, written in imitation of the medieval *fabliaux*, *Une Noce en Panne*, which treats amusingly of a civil marriage, and *Tel Maître, tel Valet*, a broad farce.

The Intermediate French Reader. Edited by M. A. Gerothwohl. viii. + 248 pp. (Murray.) 2*s* .6*d.*—This reader is based on Sir William Smith's "French Principia," Part II., which was compiled by the late Rev. Ernest Brette. The present editor has retained some of the old examples, otherwise he has re-written the book entirely. In its new form it presents a good selection of passages from many authors, arranged in a systematic way, and elucidated by useful bibliographical and grammatical notes. The book is carefully printed in clear type; we have noted hardly any misprints (*Châteaubriand* on p. 203 should be *Cha-; es* should be *les* on p. 223, l. 5; *Morhiban* should be *Morbihan* on p. 227; and *D'arc* should be *Darc* on p. 229).

Classics.

Exercises in Latin Prose with Vocabulary. By Dr. G. G. Ramsay. Part I., Lower Grade. iv. + 92 + 49 pp. Part II., Higher Grade. iv. + 88 + 49 pp. (Clarendon Press.) 1*s.* 6*d.* each.—The merits of Prof. Ramsay's "Latin Prose Composition" are well known, and it is a convenience to have the work sub-divided into smaller parts, each containing about a year's work. Both parts cover the whole of Latin syntax, but the exercises are easier in the one than the other. Each exercise has footnotes to aid the learner. A third part will contain the syntax on which these exercises are based; but since the subjects of the exercises are set at their head, the books can be used with any other syntax. New exercises in continuous prose are appended.

Longmans' Latin Course. Part III. Elementary Latin Prose. With complete syntax and passages for learning by heart. By W. Norton Spragge. ix. + 226 pp. (Longmans.) 3*s.*—We have already noticed the earlier parts of this book. The present instalment is clearly expressed, the syntax is sensible, and the exercises full. But we think that there is the same defect in this book as in most manuals of composition. What the beginner wants are exercises which ring the changes on one thing at a time; *i.e.*, there should be fewer types of sentence and more variation within the type. One section with its possible variations being set as a model, might be followed by a number of other types to be raised *viva voce* by the teacher. Given, however, the more elaborate form of exercise, these appear well done, so far as can be judged without practice.

Ludus Latinus: a Book of Latin Exercises. Adapted to the revised Latin Primer, for the use of the Fourth Form. By A. B. Ramsay. i.+185 pp. (Eton College: Spottiswoode.)—These exercises are suited to a long and leisurely study of Latin, such as can only be found now in a few schools. They illustrate the relative and other pronouns, the cases, the participles, and forms of the compound sentence. The earlier exercises are detached sentences, but a number of continuous pieces are added at the end, with hints and helps, including references to the Latin Primer. A vocabulary is added. There is nothing new to remark in the treatment: the sentences are good idiomatic English, and provide a thorough drill in common syntactical difficulties.

Tacitus, Histories III. With Introduction, Notes and Index. By Prof. W. C. Summers. xxiv. + 160 pp. (Pitt Press Series. 2*s.* 6*d.*—The new volumes of the Pitt Press Series are far superior to the old in printing. The page is not overloaded, and the type is good—important points which have been too much neglected in the past. The editing, too, appears to us better suited to its purpose. Mr. Summers, whose Sallust we have already noticed in these columns, is a capable editor, full of knowledge and enthusiasm; and he has not shown himself anxious to exhibit his knowledge, but to give judicious help to the student. (On p. 118 read *ius Latinum* or *ius Latii.*) The Introduction, besides a historical sketch, contains a good essay on Silver Latin Style. The subject of the book, the events of part of 69 A.D., is suitable for detached reading.

Ovid's Tristria. Book I. With Introduction, Notes, &c. By G. H. Wells. With Illustrations and Maps. xxix. + 99 pp. (Blackie.)—The Introduction to this book is more original than usual. The editor collects the allusions from Ovid's works to his banishment, discusses the early elegiac writers of Greece, and the uses of the measure, and gives a thoughtful estimate of Ovid's place among the poets. He might have added one great glory of Ovid: that Shakespeare studied him, and owed much to his influence in early days. The notes, however, are too full. Synopsis is all very well in history; for short poems it is unnecessary, and to supply it is to do for the schoolboy what the schoolboy ought to do for himself. Many notes give information which is better sought by the schoolboy in his mythological dictionary; and explanations such as "*Ulixen*, Odysseus" (p. 46), "*immani murmure*, abl. of description" (p. 47), are better away. A thorough weeding out would leave a good schoolbook.

The Tragedies of Sophocles. Translated into English Prose by Sir Richard Jebb. 376 pp. (Cambridge University Press. 5*s.* net.—The merits of Sir Richard Jebb's "Sophocles" are too well known to need our praises, and there is no doubt that the publication of the English version in separate form will be welcomed by a large public. We are bound to say for ourselves that we like less the translation than the notes. Prof. Jebb's English style is often archaistic, and does not go straight to the heart as a simpler style would do; he has also an irritating trick of dropping into iambics, so that whole lines or half lines abound.

> Must lay profaning hands on sanctities. . . .
> Dread things and things most potent bow to office. . .
> There is a sea-washed headland of Eubœa. . . .

These lines occur on the first three pages we opened at random; good enough lines in themselves, the first line excellent, but out of place in a prose version and irritating to a sensitive ear. These faults apart, the translation is worthy of all praise; and in scholarship eminent.

Edited Books.

The Advancement of Learning. Book I. By Albert S. Cook. lvii. + 145 pp. (Ginn.) 3*s.* 6*d.*—This is a learned but notwithstanding useful and interesting edition. The book is a small one, but it is crammed with valuable matter, and Prof. Cook is to be commended for the careful selection he has made among the materials available. The introduction begins with the little known "Life" by Rawley, and after a chronological table, estimates of Bacon follow. These are numerous, and are all extracts from writers of known authority. It will be seen from this procedure that the editor keeps himself in the background; if it were not for the note of deep enthusiasm which he strikes in his preface, Mr. Cook would hardly speak in his own person at all. The notes are splendid. The edition is quite practicable for use in ordinary upper-form work. No commendation can be too high for the handling of critical matter in it.

Scott's Talisman. xxviii. + 510 pp. (Macmillan.) 2*s.* 6*d.* —This edition is anonymous, but it makes a good reading book. The editor has taken a modest share in it, so far as his introduction goes; for he contributes only a very short biography of Scott, in which, however, some critical remarks are worth consideration. His notes are excellent. What some ambitious people would call an appendix deals with Jerusalem and the Crusades, and is well worth attention. Mr. Andrew Lang's notes are added at the end, so that it will be readily seen that a considerable amount of pains has been expended on making this book as reasonably full as it is useful.

The Carmelite Classics. (1) *Chaucer's "Prologue,"* 48 pp.; (2) *Milton's "Comus,"* 64 pp. By C. T. Onions. (Horace Marshall.) 6*d* each.—The editor of these booklets has found out a way to provide a minimum of matter in an edition which is nevertheless quite well worth using. The notes are only intended to elucidate matters that young students could not work out for themselves. Each subject is furnished with a brief bibliography and some carefully considered questions. There is, therefore, good value in both cases.

Magnus's English Course. Book I. (Words and their Use). By Laurie Magnus. 122 pp. (Routledge.) 10*d.*—This volume is in some sense a companion to Miss Kinnear's little book recently reviewed in these columns. It could not possibly be more elementary than that book; but it makes a valuable second to it, and it is directed to the same specific aim. Moreover, it is but the initial volume of a comprehensive scheme for securing a higher type of instruction in English literature than is now customary. It aims at doing away with the dull and dreary learning of the rules of grammar in the form of laws learnt from a text-book, and, intelligently used, it ought to have a good effect in this direction. The simplicity of the style in which Mr. Magnus has set about this first portion of his task will make this book welcome in junior forms, and his series of exercises at the end deserve to be commended. This volume aims at an entirely complete explication of the function of any possible word in any possible sentence which may be offered to a thoroughly juvenile understanding, and we think it succeeds in doing so.

Notes on the Composition of Scientific Papers. By T. Clifford Allbutt. viii. + 154 pp. (Macmillan.) 3*s.* net.—The primary purpose of this volume is entirely concerned with students in medicine and natural science who are required to write theses on subjects in which the lay mind is not deeply interested as a general thing. To find a genuine literary gift going hand in hand with scientific acuteness is not uncommon among the greater exponents of natural law; but it is not at all to be wondered at that Dr. Clifford Allbutt speaks regretfully about the general average of literary attainment among those whose mental energies are absorbed by scientific study. To supply some hints on style, to give hints and outlines as to the form of an essay on a technical subject, and to winnow the student's vocabulary on one hand while enlarging it on the other, are the main lines upon which these "Notes" are compiled; and they may with great advantage be studied by many who are not students of natural science. The author gives one invaluable rule for composition: "Imitate no one." What a happy peace would descend upon the world of letters to-day if only that maxim could be ground into the conviction of the great host of imitators!

Chaucer. By Rev. W. Tuckwell. 96 pp. 1*s.* *Coleridge.* By Dr. Garnett. 111 pp. (Bell.) 1*s.*—These miniature volumes are criticism in an extremely condensed, lucid, literary and elegant form. Messrs. Bell promise other volumes, and these will whet the appetite of many book lovers who appreciate books *on* books when they are properly written. These two volumes may be highly commended in every respect. Their charming exterior and the portrait given in each case ought, however, not to pass without special remark.

Dr. Johnson's Journey to the Western Islands of Scotland. By E. J. Thomas. 184 pp. (Clive.) 2*s.* 6*d.*—This paper-covered volume is one of the well known University Correspondence College Series, and is one of the subjects set for the Intermediate Arts' Examination in 1906. Mr. Thomas reproduces in this edition all the customary features of this series of publications; and when we say that these are as full of faults as of excellencies, but that they certainly subserve a practical purpose, we are able also to allow that he has done his work most commendably. We take some exception to his phrase, "he therefore caught himself," in the introduction (section 2), because that seems to indicate that Johnson did what Socrates hinted that his friends would never do; and it is slovenly as well as misleading. The section on Johnson's opinions is good, but much too uncritical—the result, perhaps, of the short space at the editor's disposal. The notes are good; but is it not very weak to explain, "Mr. Boswell: Johnson's biographer and fervent admirer," even in a note? Some things surely the readers of Mr. Thomas's introductory matter, and a candidate for this examination, "may be presumed to know."

We have received twelve more volumes published by Mr. William Heinemann in his excellent edition of the Plays of Shakespeare at sixpence net each. The high character of the series is maintained, and it should not be long before these marvellously cheap and daintily produced volumes are widely used in secondary schools. The plays which, in addition to those mentioned in our issue for September, have been published now are *Cymbeline*, *Coriolanus*, *Macbeth*, *Romeo and Juliet*, *The Tempest*, *Othello*, *King Lear*, *All's Well that Ends Well*, *King Henry V.*, *Julius Cæsar*, *Pericles*, and *Taming of the Shrew*. Each volume is provided with a short introduction by Dr. George Brandes.

Geography.

Elementary Class-book of Physical Geography. By W. Hughes; new and revised edition by R. A. Gregory. vii. + 118 pp. (George Philip & Son.) 1*s.* 6*d.*—For an elementary text-book on the subject this may be thoroughly recommended. Prof. Gregory's name on the title page is a sufficient assurance that the information given is well up to date, and that no heresies, *e.g.*, the Gulf Stream myth, are admitted. In addition, examples of earth changes of recent date are adduced as illustrations; *e.g.*, the Mont Pelée eruption, 1902. There are fifty six maps and illustrations.

We have received from the publishers three elementary geographies—viz., *British Isles*, *America*, *Asia*. By L. W. Lyde. (Black.) 4*d*.—They are written on lines familiar to teachers who use Prof. Lyde's text-books, and it is, therefore, unnecessary to say more about them, though perhaps we should add that the first-named book consists of only 12 pages.

The World and its People. The British Isles. vi. + 304 pp. (Nelson.) 1*s*. 6*d*. *New Era Geography Readers. The World.* 280 + xxxii. pp. (Pitman.) 1*s*. 10*d*.—In these readers maps and illustrations form a by no means inconsiderable portion of the contents, and in the hands of a competent teacher they are such as can be put to good use in intensifying the impressions derived from the subject-matter. In the latter volume the inclusion of several national anthems, with tonic sol-fa notation, is a somewhat unusual feature. We have little to find fault with in either case; we note one or two slips which might be remedied in future editions—*e.g.*, Leeds, p. 134 ("British Isles") is no longer a mere "town," and the map of Spain and Portugal ("The World") should, if possible, be removed from its present position between two pages of text on Germany.

Mathematics.

New School Arithmetic. By Charles Pendlebury and F. E. Robinson. xvii. + 468 + xliv. pp. (Bell.) 4*s*. 6*d*. *New School Arithmetic.* Part II. By Charles Pendlebury and F. E. Robinson. v.-vi. + 207-468 + xxiii.-xliv. pp. (Bell.) 2*s*. 6*d*. *Examples in Arithmetic.* By Charles Pendlebury and F. E. Robinson. xiii. +223 + xliv. pp. (Bell.) 3*s*.—Part I. of the "New School Arithmetic" was noticed in THE SCHOOL WORLD for September, p. 360. The second Part begins with Areas and Volumes, and discusses problems that require the extraction of the square and cube roots; the introduction of areas and volumes at this stage is undoubtedly in the interest of the pupil. Practice, proportion, percentages, interest, stocks and shares, &c., are treated with fulness—with too great fulness, one feels inclined to say, when the comparatively small part that the monetary transactions involved in these exercises on interest, simple and compound, stocks and shares, and partnerships, plays in the life of the average pupil. A good chapter on approximation is followed by one on graphs, in which an excellent treatment is given of the methods by which the graph may be employed to solve problems that would be somewhat puzzling if attacked by the methods of ordinary arithmetic. There is a good chapter on elementary mensuration, and another in which a simple but sufficient discussion of logarithms is given. The examples are very numerous, and sufficient, one would think, for any purpose to which the teacher can apply them. The "Examples in Arithmetic" are extracted from the "New School Arithmetic"; they are, in fact, simply the various sets of exercises in that book. The text-book is evidently the work of experienced teachers well acquainted with the difficulties of the average schoolboy, and it will certainly take a good place among the numerous works on arithmetic with which the market is flooded. It would be interesting, however, to know whether it would not be possible to banish from the ordinary school curriculum a great part of the commercial arithmetic of the ordinary text-book; for example, how often in actual business is compound interest required, and are the numerous examples in simple interest of such importance in daily business as their place in text-books of arithmetic seems to indicate? Should the study of these be compulsory for every pupil?

Solutions of the Exercises in Godfrey and Siddons' "Elementary Geometry." By E. A. Price. 172 pp. (Cambridge University Press.) 5*s*. net.—The solutions here provided save the teacher a good deal of trouble, and will also serve more useful purpose as a guide to the efficient use of the text book. The solutions, though brief, are quite clear, and are well worthy of careful study by teachers who are not familiar with the methods by which the newer text-books may be applied with the greatest advantage to the pupils.

A School Geometry. Part VI. By H. S. Hall and F. H. Stevens. iii.-iv. + 347-442 + iv. pp. (Macmillan.) 1*s*. 6*d*. —This Part contains the substance of Euclid, Book XI. 1-21, together with theorems relating to the surfaces and volumes of the simpler solid figures. The leading theorems of solid geometry are presented with great clearness, and are illustrated by many simple and instructive exercises. The sections which treat of the mensuration of solids are good and sufficiently complete for a school course, though perhaps a more rigorous treatment of the theorems on limits which are implicitly used would not have been beyond the capacity of a well-trained pupil. The book contains the minimum of any school course on solid geometry that is worthy of the subject; but this minimum comprises all or most of the really important matter. The diagrams are good, and the general arrangement is very satisfactory.

Practical Geometry with Mensuration. (No author's name. viii. + 160 pp. (Oliver and Boyd.) 1*s*.—The geometry in this manual includes the leading propositions in Euclid's Elements a chapter on the ellipse and a section on graphs. The aim of the book is to encourage the habit of accuracy both in thinking and in drawing, as well as to impart such a knowledge of the fundamentals of geometry and mensuration as will enable the pupil to solve problems in construction and measurement in an intelligent manner. The treatment is throughout of an unpretentious character, and the choice of material is sufficiently varied to furnish numerous instructive exercises. Though the book is not a large one, it contains many of the most important theorems and results required in mensuration, and should be of real service in schools of an elementary character.

Macmillan's Picture Arithmetic. Book I. 64 pp. (Stiff paper covers.) (Macmillan.) 3*d*.—The plan of this little book seems to be to have a picture on every second page, and to set down a number of arithmetical questions suggested by the objects represented in the picture. Experience alone can decide whether this method of awakening the interest of young pupils will be successful; but it may be said meanwhile that the pictures are well selected and well reproduced, and the questions are about as interesting as it is possible to make them. The type is clear, and the general arrangement satisfactory.

Arnold's Number Lessons: Pupil's Book, I.-VI., Teacher's Book, I.-VI. (Edward Arnold.) — These Lessons cover the ground of an ordinary school course on arithmetic, and are carefully graded. Great pains seem to have been taken to make the development as simple as possible while gradually introducing the various rules and tables. The Books for Teachers contain notes that should be of service to those who are anxious to make the most of the arithmetic lessons. The Pupils' Books are in stiff paper covers, range in price from 2d. for Books I., II. III., to 3d. for Books IV., V., VI., contain 32 pages (Books I.-III.), or 64 pages (Books IV.-VI.), and are well printed in bold type. The Teacher's Books range in price from 4d. to 6d., and contain from 32 to 48 pages each.

Miscellaneous.

The Road to Manhood. By W. Beach Thomas. With Illustrations by Morris Williams and A. Twidle. The Young England Library. x. + 224 pp. (Allen.) 6*s.*—The road to manhood, if we are to judge from a glance at the contents of this book, lies through athletic and field sports. A chapter, indeed, is devoted to "Some Winter Reading," but even that is largely concerned with games. Boys are advised to support their school journal, and to read Mayne Reid and other novelists, with a few popular poems and school songs. Just think of the hundreds of books which fascinate boys—to mention but one large class, the old voyagers, Drake and Hawkins, and the other Elizabethan sea-dogs, men who lived, and whose books live therefore! And is there nothing to read in summer time? Our author has made a mistake; he lacks balance. True, the advice he gives is excellent; no one can deny that a great secret of manhood is to be keen in everything. But can this be taught by a book or by anything except nature or good example? And when the boy reads a guide to manhood which puts mind and intellect in the far background, he will only be confirmed in his own faults. But taking this book as a guide to physical manhood, it is excellent. Written in a breezy, taking style, it gives advice and information in plenty. The boy who takes in both will be healthy and manly; but he will want more to make him a man. The subjects treated of are: Games in the Making, Volunteering, Some Winter Reading, Daily Training, The most English Game, Rugby Football, American Games, The Beginning of Football, Some Rules, Athletics as a Game, Hockey, On the Ice, In the Gymnasium, Swimming, Playing the Game. An attractive medley; but a medley it is at best, and would be better for a little summer or winter reading on the part of the author.

Earth and Sky. Number III. By J. H. Stickney. viii. + 160 pp. (Ginn.) 1*s.* 6*d.*—This is a continuation of an attempt to teach nature knowledge by reading lessons, a method with which the best teachers have little sympathy. Some of the statements of the book are unscientific, *e.g.*, "an apple tree stops at twenty-five feet to keep its apples from getting too badly bruised when they fall."

How to become a Teacher. By J. W. Berry. 96 pp. (T. Fisher Unwin.) 1*s.* net.—A useful handbook explaining concisely what steps should be taken by a boy or girl who desires to become a teacher in an elementary or in a secondary school.

The Preparation of the Child for Science. By M. E. Boole. 157 pp. (Clarendon Press.) 2*s.*—As Mrs. Boole's wide experience led us to expect, there are many useful hints in this book for teachers responsible for the education of young children. The last of the five chapters into which the volume is divided is of especial interest, showing, as it does, how scientific habits may be developed in the nursery. Any record of the results of educational experiments conducted by an experienced teacher deserves to be encouraged by all who desire to see the establishment of a science of education, and when the record is written in the interesting style of this little book it is sure of a cordial reception. Though parts of the book seem to us disfigured by a too free use of unnecessary technical expressions, too commonly employed by writers on education, we commend it to the attention of teachers of mathematics and science.

A. L. Freehand Photo Copies. Book IIA. (Leeds: Arnold.)—Gives good photographic copies of the casts set at the South Kensington and the King's Scholarship Examinations of the Board of Education between 1894 and 1903. It should be useful to teachers who have to prepare students for these examinations.

We are glad to see a new and revised edition of Mr. John Carroll's practical and altogether admirable little book on "Freehand Drawing of Ornament." (Burns & Oates.) 1*s.* 6*d.*

An Alphabet of Roman Capitals, with three sets of lower-case letters selected and enlarged from the finest examples and periods for schools. (Batsford.) 2*s.* 6*d.* net.—Mr. G. Woolliscroft Rhead gives us an alphabet of letters carefully enlarged from the inscription on the column of Trajan at Rome, together with three good sets of lower-case letters of about the eighth, the fifteenth, and the sixteenth century respectively. The letters are admirable in every way, good in proportion, strong and legible, and would be excellent examples for elementary freehand drawing.

Chalk Drawing: a Manual for Teachers. By Hannah Dean. (Leeds: Arnold.) 3*s.* net.—Contains some information about flowers which might help a young teacher taking a class in nature-study or in elementary drawing from flower and other vegetable forms, but the illustrations are not tasteful, and in her praiseworthy efforts after simplicity the draughtswoman has lost, in many cases, a great deal of the character of the flowers, fruits, and roots she depicts. Plate VI., for instance, would be quite misleading to a London child unacquainted with gooseberry bushes.

Philips' Coloured Nature-study Drawing Cards. By A. F. Lydon. Four parts, 1*s.* 9*d.* each. Part I., Flowers; Part II., Insects; Part III., Birds; Part IV., Animals.—Four practical little sets of cards, which should be helpful to teachers who have to take "nature-study" classes. The flowers are given as a whole, with sections and diagrams of their various parts on the same sheet, and there are separate sheets dealing with the different shapes of leaves. Part II. includes some interesting sheets of insects' feet, antennæ and wings. The birds and animals in Parts III. and IV. are adequately drawn, and the pages showing the various types of feet, heads and tails should be useful for teaching purposes.

Blackie's Brush-drawing Cards. By J. W. Nicol. Three sets, 1*s.* 6*d.* each.—These three sets of cards together form a complete course in brushwork for Standards I. to VII. They are printed in tasteful colour, and the forms are admirably free, while there is none of the sloppiness which we so often associate with brushwork. Mr. Nicol is more happy in his simple brush and flower forms than in his designs, but he has given us a series of brushwork copies which, while they are about the same price as other cards of the kind, are very much better.

Nelson's New Drawing Course. Set IV. By J. Vaughan. 15*s.*—Consists of ten folio cards with large brush-drawing and small modelling copies on one side and free drawing copies on the other. The set contains a wide range of fairly well chosen subjects.

A Batch of Small Books.—The infants are month by month well catered for. The "Temple Infant Readers" (Horace Marshall), in three parts, fourpence each, are well printed, well illustrated, and admirably adapted for one purpose at least—*i.e.*, the acquisition of the right vowel-sounds. Teachers can make good use of the illustrations, which might be copied even by infants. In the "Aim and Method of the Reading Lesson" (Macmillan, 1*s.*) we have an Australian lecture by Mr. Charles Long. The value of reprinting in England American and Australian pamphlets is being realised, and the English teacher will find the lecture thoroughly sensible and appreciative of the importance of the subject; but surely we can make too much of

method of teaching singing, very little has been devoted to the method of teaching instrumental music—*i.e.*, in the majority of cases to the teaching of the piano. Most of my remarks and suggested reforms are more applicable to girls' schools than to boys' schools, because in so many cases boys' piano lessons are stopped just when the boys are arriving at an intelligent age.

In the first place, it ought to be recognised as a hard and fast rule that the elements of harmony and counterpoint must be taught as well as instrumental execution. There is, of course, a great improvement in this direction; but in too many cases harmony lessons are optional, and too often there is little, if any, opportunity given for the pupils to learn any harmony. Even if it is not possible to give separate lessons in it, it ought to be taught in the course of the ordinary music lesson. It is more important that the music learnt should be understood than that rapid and superficial progress should be made. Half the pupil's difficulties in remembering his music are swept away when there is some knowledge of harmony.

Secondly, when we hear so much talk about the training of teachers, surely it is important that music teachers should have some grasp of general methods of teaching. I believe I am right in saying that knowledge of the theory and practice of teaching is not exacted in the case of a music teacher. Of course, there are obvious difficulties in the way at present, but these might be surmounted.

There is little class teaching for the music teacher at present, but if it was recognised that the piano master or mistress should also give lessons in harmony and class singing, then some experience in that would be necessary. In no lesson, however, is there more scope for the training of children's characters, than in the music lessons.

Too often the choice of music is simply dependent on mechanical proficiency, instead of being determined partly by the character of the pupil. In the same way, a method is often adopted by the teacher for all his pupils, however much they differ in character. I have myself seen a method which aims almost exclusively at developing quickness and ease in sight reading adopted with pupils who naturally err on the side of quickness and superficiality.

Children should also be taught to think about their music, and should be taught to detect the differences between the works of different composers. If occasionally a written exercise could be set on the subject of the music the pupil has been studying, surely it would add considerable interest to the routine of daily practice, and not be time wasted. If general lessons could be given at times on the history of music, or the lives of great musicians, we should see a more intelligent appreciation of music both at school and afterwards.

I offer the above suggestions because I believe that there is in most schools room, and also time, for a broader and more intelligent treatment of music.

MARGARET C. N. PAREZ.

The College,
Inverness.

Discipline in the Laboratory.

I DO not think that there can be two ideas on the question raised by "Science Master." When boys in the laboratory work together in pairs, as is the custom with our large classes here, we have never attempted to stop them from talking quietly about their work. For it is perfectly easy for an experienced teacher to see at a glance whether any two boys are really in earnest, and that their conversation refers to what they are doing. Possibly the inspector to whom "Science Master" refers forgets that in laboratories, as well as in class-rooms, a "disciplinarian" "may create a wilderness and call it peace." Perhaps I may add that the distinguished expert whose business it is to inspect our boys has expressed himself as perfectly satisfied with their behaviour in the laboratory.

Eton College, Windsor. M. D. HILL.

A "SCIENCE MASTER" is taking inspectors too seriously. It is too much to assume that all should both know science and know how it should be taught. An inspector visited me once while taking a class in chemistry. He marvelled that I had not fitted up the room with pulleys and Atwood's machines, and assured me it was quite easy to make them myself. He had evidently come straight from some physical laboratory.

With regard to the question of allowing boys to work in pairs, this has been the usual practice of every "science master" I have come across. How it should be possible, and why it should be desirable to prevent them discussing the details quietly together, are rather unusual questions to ask; and it would have been a matter of some interest if the inspector had given his reasons for insisting upon absolute silence.

Cranleigh School, Surrey. F. BRETT.

THOUGH somewhat late, I should like heartily to endorse all that "Science Master" has said with regard to discipline in the laboratory during practical work.

I, too, have been led by the experience of years to permit quiet conversation about work with my girls; indeed, I consider it absolutely necessary when pupils work in "sets." It is comparatively easy from the attitude of the girls to determine whether they are talking about matters other than the work in hand, and they are very rarely guilty of such a breach of confidence. When it does occur, I find that the sentence of "no talking" for everybody is the worst punishment I can devise, as they are thereby hindered in their practical work.

I have been occasionally amused by the shocked expressions of visitors who at first do not comprehend my plan, but I am glad to say that our Inspectors are enlightened enough to understand and approve these methods. I send my testimony in the hope that other teachers may be encouraged to give their experience. SCIENCE MISTRESS.

I WAS glad to see "Science Master's" letter on this subject in your September issue, as I happen to be a fellow-sufferer, the critic in my case, however, being my headmaster, and not an inspector. (I do not, by the way, find inspectors, as a rule, candid enough to tell me what they object to, except through the Board of Education. I only wish we were blessed with men who would discuss matters straightforwardly with us and give us some real help or advice.)

To return to the question of talking in the laboratory. Personally I have always encouraged it, and have never had any direct objection to it, except from my present headmaster, who does *not* take practical work. His objection, I should say, was not pressed.

I take discussion between boys working together to be absolutely necessary for real progress, and I find that it not only stimulates them, but that in addition it often raises points which otherwise would never have been raised, and, to be quite candid, I have learnt much myself in this way.

I would even go farther than the laboratory, and encourage reasonable discussion in the class-room, for I believe that boys, as a rule, conquer their difficulties far more in this way than from direct help from their master.

After all, the good disciplinarian is not the high-and-mighty silence-at-all-costs man, but rather he who allows the boys to feel, as it were, "free and easy," and yet takes care that they know that there is a line ready to be drawn if necessary.

TEN-YEARS SCIENCE-MASTER.

arly incumbent upon us to impress upon our pupils what itations are imposed upon them in the use of each particular ol, and to see that they never employ the tools, which they e learning to use, for any purpose for which they are not apted. It is equally clear that this is impossible if examiners d the writers of text-books persist in requiring them to try these ols beyond their powers.

In the preface to a recently-published up-to-date text-book e are told that: "In the use of four-figure tables, answers vary ightly according to the precise method of working; *e.g.*, log 4 s not precisely the same as 2 log 2; such variations occur hiefly when there are several formulæ applicable; the authors ave in many cases indicated which formulæ should be used to obtain the answers in the book." Now, I maintain that this nust be the wrong way to meet the difficulty in question. It cannot conduce to correct notions in a boy's mind to suggest to him, even remotely, that one answer is right if you use one formula, but that a slightly different one would be right if you used another. The boy should be shown that the tool he is using, in this case the four-figure tables, can only be relied upon to give an answer correct to a certain degree of approximation, and he should not be allowed to attempt to use these tables to obtain a closer result. As pointed out in the passage quoted, four-figure tables cannot be relied upon to do so simple a calculation as $2 \times 2 = 4$ correct to four significant figures. If anyone will take the trouble to work it out, he will find that the answer obtained is 3·999, which is correct to three significant figures, but not to four. The difficulty is one which is inseparable from the use of such tables, in which the values given are only a very rough approximation to the actual values of the logarithms; but surely the right way to meet it is to explain shortly to the pupil why the fourth figure cannot be relied upon, to teach him to estimate roughly how many figures ought to be given as correct, and not to allow him to assume a greater degree of accuracy in his answer.

The above considerations apply equally to the graphic ethods of solution of various problems; but in this case a boy hould be encouraged to make frequent comparison of the sults obtained by calculation and by drawing, and to deduce om a series of such observations the degree of approximation, hich he himself can reasonably expect to obtain by graphic ethods. Similar comparison at convenient intervals will show n whether he is acquiring greater facility in the accurate use his instruments.

In conclusion, I would appeal to all examiners and writers text-books to assist those teachers, who still desire to culti- e accuracy of thought in their pupils, by exercising reasonable e in the selection of the number of significant figures which y ask for, by setting easy test questions on the relative value he possible errors involved, and, above all, by scrupulously iding all questions which place the candidate who has accu- e knowledge at a disadvantage compared with him who has ne, such as the rough approximation (?) to the circumference the earth, set in a recent Army entrance examination, which rked out at 28,000 miles!

CECIL HAWKINS.

Haileybury College.

"Conduct" as dealt with in School Reports.

MOST teachers know the feeling of dissatisfaction that often companies the writing up of the monthly or term report of pupil's progress. Percentages show results, but by no means ways deserts; and, even where remarks are allowed along with instead of marks, satisfaction is not always the outcome.

But perhaps it is when we come to report on "conduct" it the greatest difficulty faces us. The customary formula be found on report forms—excellent—satisfactory—fair—unsatisfactory—are all alike unsatisfying to a teacher, interested in pupils as individuals with peculiarities of disposition and character to be taken into account.

There is the sort of pupil who gets through a term without doing anything definite enough to deserve punishment, either in the form of bad-conduct marks or loss of good conduct marks. There is no *reason* for withholding, in such case, "excellent" or "satisfactory" from the report, and yet for indefinable considerations one feels that it is more or less of a farce to give it.

Again, there is the undoubtedly well-disposed pupil, who is less cautious, it may be, than the other. He commits some breach of discipline, thoughtlessly or otherwise, and suffers accordingly in his report. The feeling is that justice has not been done in either case. Even in reports where "remarks" are provided for, the space available is too circumscribed for adequate comment. Extreme cases have perhaps been chosen, but they serve to illustrate the common difficulty of being quite fair to our pupils when writing their school reports.

Now it is not the intention of this letter to seek to propose a cure for what, from the nature of the case, is incurable, yet reflection would seem to suggest a possible improvement, and that a very simple one. For when we think about the difficulty of reporting on conduct in a word or two, this difficulty seems to arise in part from want of clear thought behind language. Mathematics -- French — history — cooking — all have definite meanings. We do not tend to confuse one with the other, nor to include two or more under the one name.

Not so with the word "conduct." The term is commonly used to mean either or both of things quite as dissimilar as any two of the above-quoted subjects. Would it not be better, then, to substitute, for the one heading "conduct," two headings "discipline" and "manner," or some equivalent terms. So far as the writer knows, this has not hitherto been done. Discipline has indeed been written and talked about until it might almost seem to stand for conduct in school. Yet surely such a tendency of mind is fraught with danger unless we take due thought for the courteous bearing to be cultivated in school as in the home, which may perhaps for convenience be termed "manner" as distinct from "discipline."

The distinction here referred to is too obvious to require explanation, yet an example or two of what is meant may not be out of place. Under "discipline" would come the keeping of hours and rules as laid down for the school. Personal neatness, tidy work, legible writing, attentive attitude in class, are things that would seem to gain in ethical value if put on grounds of courtesy to one's fellows—companions or teachers—instead of being confused with discipline of which they cannot accurately be said to form part.

To adopt some such alteration in reports would seem to have a twofold advantage: it would tend to enable a teacher to give a fairer expression of opinion on a pupil's conduct. The fact that "manner" was given definite recognition, side by side with the other items of a school report, must be of benefit to the pupils themselves. It would encourage boys and girls to cultivate graciousness of behaviour towards others, which is perhaps even more valuable than a training in discipline as a preparation for after-life.

LILIAN DALY.

The Teaching of Music.

I THINK that most people who are at all interested in the teaching of music will admit that there is great room for reform. Both singing and instrumental music now occupy an honourable place in all boys' schools, as well as in girls' schools. While, however, a great deal of attention has been devoted to the

reason for this. As it is the only point you call attention to, you may perhaps, in justice to Messrs. Blackwood and myself, direct his attention to this, when I hope he will be able to modify his closing statement. The book was published to give the student the usual tests performed in elementary inorganic analysis, together with the reason for each operation.

H. M. TIMPANY.

ON revising the separate tables in Mr. Timpany's "Tables for Qualitative Analysis," I find that the test for phosphoric acid is inserted, and I regret that my remarks were undeservedly severe. The Tables are arranged in a somewhat unusual manner, resulting in the above test being placed in an obscure position on an extensive table which bears the title "Group II *a*;" in fact, the preparatory treatment for any group is attached to the table allotted to the previous group. The plan, adopted in practically all standard text-books, of inserting a *General Table* for the separation of the groups immediately before the tables allotted to the individual groups, is preferable; the treatment between consecutive groups is then quite conspicuous.

YOUR REVIEWER.

MUTUAL AID.

THE object of these columns is to afford teachers the opportunity of asking questions of and giving assistance to colleagues. The questions received to which replies are solicited will be printed first; following these will be the answers which have been sent in, and, to make such replies intelligible to all readers, they will be accompanied by the question.

Readers are invited to send answers to any of the questions asked below by our correspondents.

The questions should deal only with educational matters, using the expression in a broad sense, and the publication or otherwise of any question must be left entirely to the discretion of the Editors.

Questions and answers should be addressed to the Editors of THE SCHOOL WORLD, St. Martin's Street, London, W.C., and should be accompanied by the full name and address of the sender, though not necessarily for publication. Each question or answer should be on one side only of a separate sheet of paper.

QUESTIONS.

C. H. C. Will any schoolmaster who has taken up some branch of practical work, such as Electric Lighting, or any work which might prove profitable on compulsory retirement from teaching, give your readers the benefit of his experience?

W. J. T. Would some reader, with experience of school dramatics, suggest some plays or portion of plays suitable for production in a mixed school?

QUESTIONS WITH ANSWERS.

C. H. C. *Why was a Horse Power originally so called and how is the Horse Power of an engine computed?*

J. R.—James Watt, who introduced the term, had in mind the rate at which a good horse works, and this he estimated at 33,000 foot-pounds per minute. This estimate is the standard horse-power. "The power of a draught horse, of average strength, working eight hours per day, is about four-fifths of a standard horse-power" (Webster).

For the method of computing the horse-power of an engine see any standard work: *e.g.*, "The Steam Engine." By Prof. J. Perry. (Macmillan.) Chapter iv.

* * * * *

M. REGIS, Ghent. *Can anyone tell me where I can obtain English translations of the following books: "Les fâcheux," by Molière; "Siècle de Louis XIV.," Voltaire; "Scenes of Travel," Gautier. I shall also be grateful for the name of a good history of French literature suitable for pupils preparing for the Oxford Higher Local Examination.*

DE V. PAYEN-PAYNE. "Les fâcheux" is perhaps contained in Waller's version of Molière, now being published by Mr. Grant Richards. All Gautier's works, too, are being translated by M. F.-C. de Sumichrast and published by Messrs. Harrop.

J. T. M. "A Note-Book of French Literature." By Philip C. Yorke (Blackie) will probably suit M. Regis.

* * * * *

E. P. *How can my new cinder playground be got to "bind"? It is on a slope. It was laid down with eight inches of broken bricks and four inches of cinders.*

A. E. MUNBY, 28, St. Martin's Lane, E.C. E. P.'s question is a little difficult to answer without seeing the condition of the ground and the character and size of the cinders. Under the severe treatment which a playground in a school generally receives it is difficult to find a natural surface which will not kick up. Furnace clinker, of which the surface in question is probably made, never binds well alone; when used for roads it is sometimes mixed with limestone, which helps it to bind, but induces rather lumpy wear. If interspaces exist between the cinders some fine material should be mixed in and the whole well rolled; probably an admixture of clay, added in a dry state as powder, would help to keep the ground together better than any other natural substance, but it will be added at some sacrifice to dryness in wet weather. A grouting of Portland cement sufficient to fill the interspaces would, if allowed to penetrate through to the brick, produce a hard and compact mass which should stand a good deal of rough usage; the cost, however, would be considerable if the area is extensive. The amount of slope, the area to be dealt with, and the existing drainage of the ground, are all questions which should be known in order to get proper advice. E. P. will probably find that the most economical course in the end is to get the advice of a road engineer or of his school architect after the site has been seen.

* * * * *

R. H. S. *Can any one recommend a good set of free-hand drawing copies or test cards suitable for Cambridge Preliminary Local Examination work?*

A. H. C. You will probably find Mr. G. Woollicroft Rhead's "Memory Drawing of Plant Form" (Chapman and Hall, 2s. 6d.) suit your requirements.

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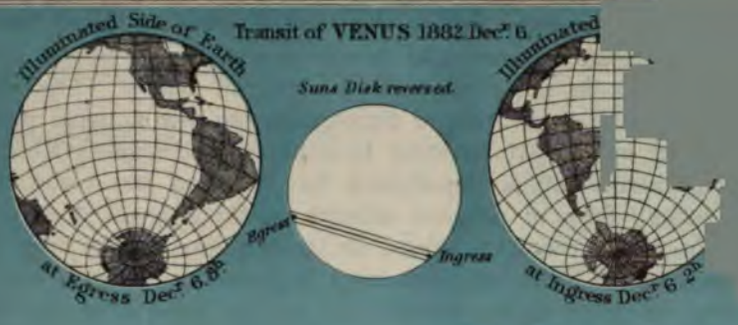

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P.T.O.

PREFACE.

THE progress of Astronomy during the century recently closed has exhibited itself in two distinct forms—the march of scientific discovery and the increasing interest shown in the science by the general public. The discovery of the spectroscope and the application of photography to astronomical research have opened up new and intensely interesting branches of the science, while the older and more strictly mathematical department has been no less vigorously pushed forward. The second form of progress alluded to, for progress it must assuredly be admitted to be, would seem to depend for its existence on the first. The daily increasing interest in the study of Astronomy is doubtless due in a large measure to the rapid advance made in the science, and to the enlarged means of publishing, and above all to the improved methods of illustrating the accomplished facts as soon as they have reached the point at which they can be made interesting and intelligible to educated people who have not devoted special attention to astronomical study. That the general interest in astronomical study has enormously increased of late years is a matter which can hardly be called in question. If any proof of the fact were needed, it would be necessary only to call to mind the existence of flourishing societies, specially intended for the study of astronomy by amateurs (amateurs in the best sense of the term), which have been founded, as well in Great Britain and the Colonies as on the Continent and in America. The hope of still further increasing the number of such amateurs is the prime object of the few pages which follow.

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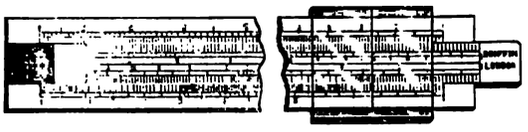

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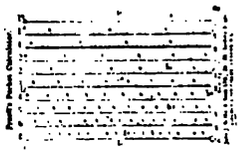
Pocket  Calculator

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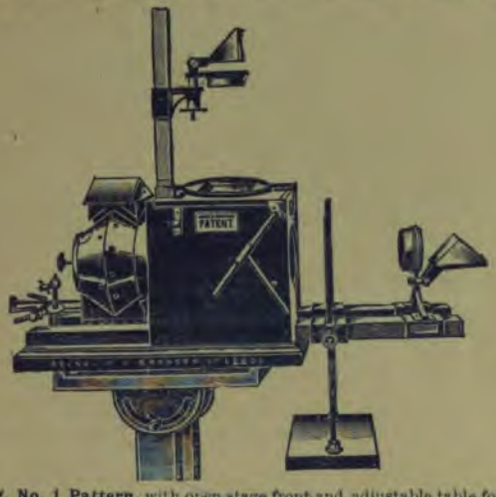

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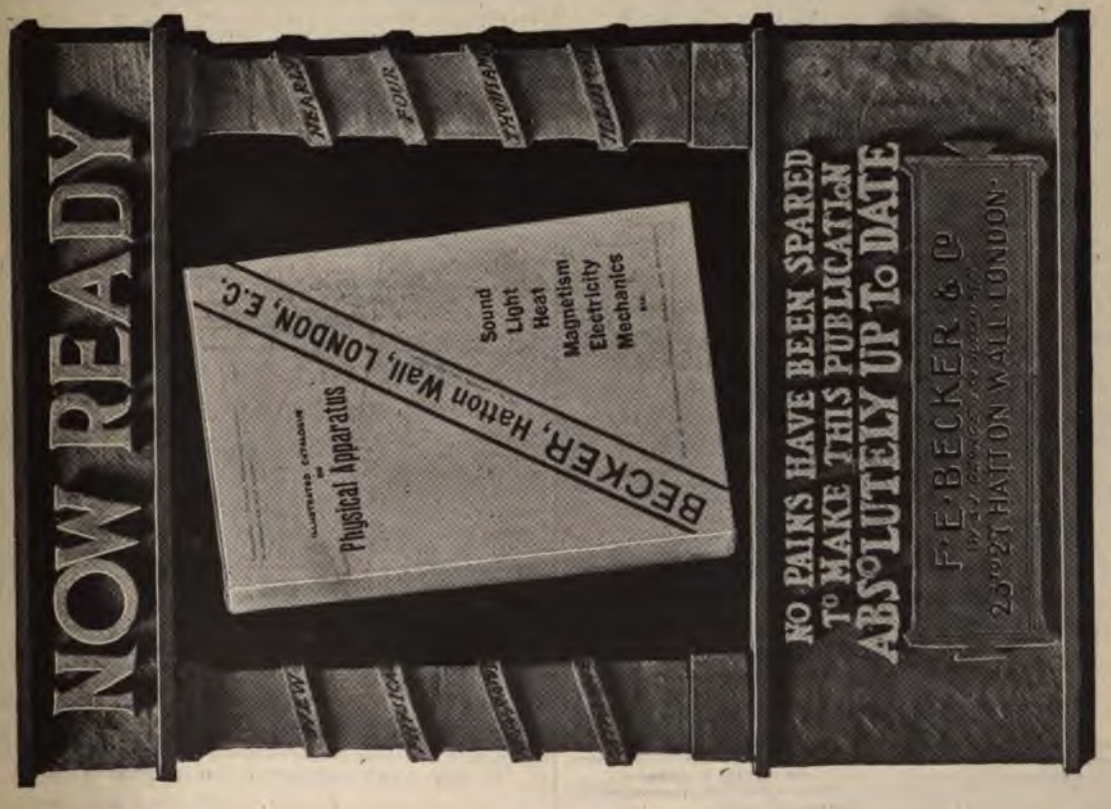

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By the aid of inscriptions and by the careful study of the best MSS., it is possible to discover the customary spelling of certain periods: as, for instance, the later Republican period, the Augustan age, and the early Imperial age; but, whilst most questions may be decided thus, there remains a certain number of doubtful cases, not, however, many enough to make reform practically useless. The editor will then regulate his spelling by the rule of the author's time. Plautus and the old dramatists will not be spelt in the same way as Juvenal or Tacitus; nor, if they allowed themselves to vary in the spelling of the same word, will the editor alter them, provided the evidence is strong enough. At the same time, for schoolbooks a certain compromise may be allowed, and it will be better to be uniform within a given period than to be confusing.

The use of *i* for both vowel and consonant is now common and presents no difficulties, because an Englishman will pronounce such a word as *iam* almost right, even if he does not know that the first letter is a consonant. The case of *v* versus *u* is different. *U* is not a Latin letter, which is something; and *v*, however easy to recognise as a vowel for Englishmen of three hundred years ago, is never so used now. There is, therefore, a practical reason for keeping both symbols. Opinions, however, will differ on this point, and it is one

which must be carefully deliberated; but opinions will hardly differ on the question, whether such a word as *quum* should be permitted. It is well known that down to the Augustan age the Latin language did not know the sound or the symbol VV: they wrote and spoke *quom* (or *cum*), *servos*, *sequontur* (or *secuntur*). A principle such as this is not to be given up to avoid the possible confusion of *servus* with *servos*, which will only trouble beginners and will not trouble them if the long vowel be marked. The most difficult matter of principle is the spelling of compounded propositions: *adfero* or *affero*, *inpendo* or *impendo*. A careful examination of the evidence is necessary before these points can be decided, but there will be no practical difficulty for the learner, who will only have to notice what is set before him. The same may be said of the accusative plural of *i* stems, as *tristis*. As regards particular words, each must be taken on its merits. Further information may be found in W. Brambach's "Hilfsbüchlein für lateinische Rechtschreibing" (Leipzig, 1884).

It will be seen from a consideration of the last paragraph that for beginners the question of spelling is bound up with that of quantity; and that, if ambiguities are to be avoided, certain quantities must be marked. The reform ought to take this into account. I would go farther still and say, that for beginners all vowels *naturally* long should be marked. This opens a new set of facts to be carefully investigated, but a great deal of work has been done in the matter and its general principles are well known. Certain vowels, long by nature, occur in a syllable which is long by position, and these by our English lips are always mispronounced; but why should they be so? I do not argue that we can ever speak as the Romans spoke. The intonations of the phrase or the sentence, which are the essence of a spoken language, are for ever lost; they cannot be described, nor can they be indicated in writing; but we can pronounce a long vowel long if we know it to be so, and I propose that all such should be marked in all beginners' books. Many a precious minute will be saved to the teacher, who now has to be for ever correcting quantities even in verse; and these "concealed quantities," if marked, will be easy to learn correctly from the first.

The rules for "concealed quantity," so far as they are general, will be found in all good grammars, *e.g.*, Hale and Buck (Ginn), p. 359; Lane (Harper's), p. 437; Postgate's "New Latin Primer" (Cassell), p. 117. They are simple. Thus all vowels are long by nature before *ns*, *nct*, *nf*, *gn*, *nx* (*īnfāns*, *mānsī*, *benīgnus*, *ānxius*); before *x* and *ct* when they come from *gs* and *gt* (*āctum*, *rēxi*); before *ps* and *pt* when they come from *bs* and *bt* (*scrīpsī*, *scrīptum*); before *sco* in inceptives (*crēscō*, &c.), except *discō*, *poscō*, *compescō*; before consonatal *i* (*ēius*). Contracted vowels are long (*amāssent*); compounds follow their origin (*vēr vērnus*). Separate words must be decided on their merits, and although there are many doubtful, most doubts can be clearly decided. The evidence and a full list of words is given by A. Manx in his "Hilfsbüchlein für die Aussprache der lateinische Volkale" (Berlin, 1883), which will serve as a useful basis for investigation.

The proposal here made is something new in this country and will, no doubt, be opposed for that reason. It will certainly be opposed by the publishers who pour out their schoolbooks upon a long-suffering world, and probably by many teachers who have ceased to learn anything; but I hope that those who can learn and who wish to do what they have to do as well as it can be done—a growing class, I believe, now that education is beginning to be taken seriously—will not turn aside without impartially weighing the matter. In America, beginners' texts have long been printed in the way here advocated, and shortly a series of Latin texts, in which spelling has been corrected and long vowels marked, will be issued by Messrs. Blackie.

THE TEACHING OF DYNAMICS IN SCHOOLS.

By G. M. MINCHIN, M.A., F.R.S.

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THE Mathematical Association, having issued a very notable scheme for the improvement of geometrical teaching, has addressed itself in the same reforming spirit to the question of the teaching of dynamics—understanding by this term the *science of force*, and including in it the subjects of *Statics* and *Kinetics*.

Now, one of the first questions with which the teacher of this science has to deal is this: Is statics to be taught first and without reference to kinetics, or are the two branches to be taken together from the outset? Apparently, since the various motions produced by forces involve a complexity which is not involved in the state of rest, a treatment of equilibrium must be much more simple than that of motion, and therefore statics should come first. Adopting this view, I taught for many years the subjects of statics and hydrostatics at Coopers Hill for nearly six months before even uniformly accelerated rectilinear motion was begun; but some ten years ago I determined to try a system proceeding from the outset on the conception of force contained in Newton's Second Axiom, in which forces and their components are always numerically associated with accelerations. The state of equilibrium was merely a particular case which—at least in the earlier portion of the subject—presented no more simplicity than the state of motion.

Of course, this plan necessitates the teaching of the small amount of kinematics involved in the equation $s = ut + \frac{1}{2}at^2$ of uniformly accelerated motion, but the simple quadrilateral diagram which shows this truth does not take the beginner many hours to learn.

After an experience of both systems of teaching, my opinion is in favour of the newer—that is, the system which founds the notion of force on acceleration, proves the fundamental proposition (parallelogram of forces) by means of the composition of velocities, and takes statical and kinetical questions concurrently from the outset. In this way we avoid the indescribable absurdities of the teaching which more than a generation ago produced such a muddle in the minds of students by its foolish distinctions between "statical force" and "dynamical force"—as if there were two distinct force entities.

Quite early in the beginner's career he should be exercised in questions concerning the action of specified forces on a body placed on an inclined plane, whether rough or smooth; but it is by no means necessary that kinetical conceptions should be excluded from such problems. We may ask what acceleration will be produced in the body if any of the forces are altered, so that their resultant is not zero; and thus, even when the bulk of our work relates to the conditions of equilibrium, we prevent a forgetting of the kinetical ideas and principles.

While referring to inclined planes, I would point out that a great deal too much distinction is generally made between the part of dynamics relating to smooth surfaces and that relating to rough; there is too great a postponement of problems on friction. This is objectionable on two grounds—firstly, that smooth surfaces are an unreality; and secondly, that the introduction of a tangential force, in addition to a normal one, should be really a very simple matter for any pupil, who needs to be taught for the purpose only two things:—

(1) The force of friction always takes the direction opposite to that in which slipping is trying to take place.
(2) This force, when slipping is on the point of occurring, is assumed to be a constant fraction of the normal pressure.

This assumption, however, must not be taken too seriously, as the pupil will be ready enough to admit.

There is a point connected with the notion of an "average" value of a variable quantity to which I wish to draw the attention of teachers. There is something of a delightful vagueness—or shall we call it a relaxing of rigorous principles?—about an "average" value, which has a strong fascination for all students. They are always delighted to use it in proving anything. They will tell you that $s=ut+\frac{1}{2}at^2$ follows at once, because "you multiply the average velocity by the time," and if you ask them to find on the same principle the area of a portion of a parabola or any other curve cut off by two ordinates, with a given interval of abscissa between them, they will tell you to multiply this abscissa by the "average" ordinate; but you dare not press them farther. If you do, they become less communicative, and you are driven to the cruelty of showing them that their nice "average" rule is the most impudent of frauds—that, in fact, what their rule amounts to is this: "Multiply the abscissa by an ordinate of proper magnitude and you will get the right result!"

Well, this "average" proof happens to be correct and at once applicable in the case of any quantity whose curve of diagrammatic representation is a right line, but in all other cases it is a perfectly useless rule—and even a vicious one to put into the mind of a beginner, unless he is warned against the fallacy of assuming that *average* and *arithmetic mean* are always the same.

As an examiner, I meet this rule with most exasperating frequency, and I am expected to give credit to it. Sometimes, indeed, my objections are appeased by a candidate who condescends to add a few words of justification. The words are always the same—they are these: "At any time before the middle interval the velocity is as much less than the velocity at the middle as the velocity at the same time after the middle is greater, therefore, &c." This, to my mind, still fails to bring out the proof; and I feel certain that, to the great majority of those who have learnt the formula, it is but a collection of words.

Teach a student the use of a diagram for representing the values of any variable quantity—no matter *how* the quantity may vary—and show him what the area of the diagram means. He will learn the principle in a few minutes—the very essence and foundation of the integral calculus, however mysterious the sound may be—and the rectilinear diagram of uniformly accelerated motion will be to him no simpler to understand than a diagram of the most erratically varying velocity.

A question of great importance in the early teaching of dynamics relates to experimental verifications of laws and measurements of results. Is the teaching of the subject to be at first purely experimental? I do not think that it can be so. I should say that, instead of keeping experiment and theory apart, the two should be taken together—the one as often as possible verifying the anticipations of the other—and that this system should be adopted also in the advanced portions of the subject. Thus, the theory of the equilibrium of heavy chains, forming catenaries, admits of a large amount of experimental verification if we employ small spring balances for the measurement of tensions.

Experiment is more striking and impressive to the student when it is employed to verify some calculated result, and hence, in my opinion, it should not *precede* theoretical teaching, but be used as a constant attendant on it.

The teacher who desires to employ experimental illustrations cannot do better than use the common funicular polygon. It can be made to yield a very large number of illustrative examples. Take a piece of thread; at arbitrarily assigned points on it let arbitrarily assigned masses of lead be attached; calculate by easy graphic statics the figure that will result if the thread is hung from its extremities; draw this figure on full scale on a drawing or black-board; suspend, finally, the thread and its

attached masses, and verify that it coincides with the calculated figure.

One of the early difficulties of a student is the nature of the tension of a cord, the puzzling thing, to his mind, being the action in two opposite senses at once. He should, however, be made to understand that this is characteristic of every force in the universe; and I think that if more use were made of the spring balance (by inserting it into a cord, the tension in which had been calculated) the difficulty about the equal and-oppositeness would rapidly disappear. The danger of an exclusive adoption of an experimental method for a course of teaching is that it inevitably assumes a great deal and encourages a student to assume a great deal more than is permissible or even true. Its general tendency is to loosen the foundations of strict scientific reasoning—a danger which many people fear with regard to our recent changes in geometrical teaching—and to replace them by rule of thumb, and nowhere is rule of thumb more potent than in dynamics; nowhere does it call for such severe checking. An experimental measurement which is wholly unaccompanied by any knowledge on the part of the student of the theoretical basis and principle of the experiment strikes me as objectionable. Let me take an example of a rather advanced nature—one of frequent occurrence. A uniform circular disk, kept with its plane horizontal by means of a vertical wire attached to its centre, is immersed in a liquid and set oscillating about the vertical wire, the forces acting on the disk being the torsion of the wire and the friction of the fluid. We have a series of damped oscillations, and from the decreasing amplitude a student who is given a formula can calculate the coefficient of viscoscity of the liquid. Now, although the mere observation of the amplitude of the motion can be accomplished by any student, the experiment involves several things which are utterly unknown to the observer—the moment of inertia of the disk, the moment of the torsional stress of the wire, and even the dynamical principle of moment of momentum on which the whole thing depends, to say nothing of the integration of the differential equation of motion. This I take to be a vicious kind of experiment—unless it is being performed (as it seldom is) by a student who knows what he is about; and it is a kind of experiment which, in my opinion, a teacher of more elementary dynamics will do well to avoid; in other words, he should aim at placing his pupil more in the position of the Boer soldier, who knew something of the idea and the plan of the battle, than in that of the British, who merely did as he was told.

To base the whole theory of moments and the composition of parallel forces on experiments with a lever seems to me to be a mistake, but the lever may well be used as a verification; and in this connection I would observe that the student should not be taught the *principle of moments* as if it were a principle quite distinct and separate from the principle of components; each of them is a necessary geometrical property of a vector deduced from two vectors by the parallelogram law; and indeed the moment property has the greater potency, since from it alone the parent parallelogram law itself can be deduced.

A piece of elementary work, on which the Mathematical Asscciation Committee has been justly severe, is the treatment of the theory of Atwood's machine, which was in vogue a few years ago, and which may still be occasionally found. Two masses, P and Q, are attached to the ends of a cord which hangs over a massless pulley, devoid of friction; find the acceleration, &c. "Mass moved $= P + Q$, moving force $= P - Q$" (taking a gravitation unit); therefore $a = (P - Q)g/(P+Q)$. It is doubtful if one pupil out of five hundred taught in this way could justify this proof—I doubt, indeed, if the thing is justifiable at all in strict reasoning. The impotence of such a method of proof would have been more apparent if the Committee had adopted the suggestion to say that if the masses P and Q were replaced by small pulleys of negligible mass, over each of which was passed a cord, from the ends of which masses p_1, q_1 (for one pulley) and p_2, q_2 (for the other) are suspended, it would be impossible to apply the rule, "mass moved $= p_1+q_1+p_2+q_2$, moving force $=$ ——?" I have always found this example decisive in convincing a student who had been taught the old method, that it is misleading and fallacious.

In any suggestions for the teaching of dynamics it would be impossible to omit a reference to the preposterous *poundal*. As an illustration of an *absolute unit of force*, of purely theoretical interest, the poundal has its use—just as many other such imagined units would have a use; but either the teachers or the taught have actually taken the poundal seriously, and have got into the habit of expressing force magnitude in the most practical questions in terms of poundals!

On several occasions when examining candidates for Woolwich, when I have required the magnitude of the force necessary to drag a wagon up a given rough inclined plane, the candidate has replied in poundals! The teaching which leads to such a ridiculous result must be strongly condemned. Probably the best cure for foolish proceedings of this kind is to be found in plenty of *numerical* examples and questions of a somewhat practical nature. The limits of this article prevent me from treating in detail of many matters of considerable importance in the teaching of dynamics, but it would be impossible to avoid a reference to the ancient and deeply-rooted fallacy concerning "centrifugal force"—more especially as the Mathematical Association has courageously, and without qualification, condemned this time-honoured source of confusion. The notion that a particle revolving in a curve is acted upon by a force acting *outwards*—*i.e.*, towards the convex side of its path—is a fallacy almost universally held, utterly subversive of the statement in Newton's Axiom II. Whether or not this notion is mainly traceable to d'Alembert's useless principle, I cannot say. There are many people who, while admitting the fallacy, defend the retention of the term "centrifugal force" with the

understanding that this force does not act on the revolving body. The defence, however, is futile, because it would compel us to make in *all* cases of motion and equilibrium an *explicit* recognition of the equal-and-oppositeness of *every* force. Thus, if we are treating of the equilibrium of a body of weight W acted upon by a force P on a plane exerting normal pressure N and friction F, the centrifugal force principle would compel us to represent the forces ± W, ± P, ± N, ± F, since every force has a double aspect, by Newton's Axiom III. But who wants to trouble himself with the force −W, which is exerted by the body on the earth? And it is vain to say that this is all that is meant by writers who speak of centrifugal force, for I could quote many examples from books in common use in which the writer, with the most laudable honesty, represents centrifugal force in a diagram as a force acting *on* a revolving body. Let us hope that such teaching will soon disappear completely. With regard to the statement of Newton's Axiom II., the Committee of the Mathematical Association, while recommending that it shall be taught in explicit language, has refrained from giving it the necessary intelligible form. As it stands in the condensed form of the Principia, it is certainly vague if not unintelligible; nor is the slight change, "rate of change of momentum is proportional to the impressed force," much better. The statement which I have found to be effective is this: "When a particle is acted upon by any number of forces, its resultant acceleration is at each instant coincident in direction and sense with the resultant of the forces, and the product of the mass of the particle and the resultant acceleration is the absolute measure of the resultant force."

The same rule applies to the *component* acceleration in any direction, and the total component of the forces in that direction.

Combine this statement with Newton's Axiom III. and the uselessness of D'Alembert's Principle is obvious.

Apart, then, from the more minute details of the teaching of dynamics set forth above, my main contention is contained in the two propositions:—

(1) The notion of force magnitude should be founded exclusively on Newton's Axiom II., and Statics and Kinetics should be taught together at the outset.

(2) Experimental work should not precede dynamical theory, but the two should proceed simultaneously.

Recitations for Infant Schools. Compiled by Margaret Riach. Books I., II., III., IV., V. About 32 pp. each. (Blackie.) 1*d.* each.—In every respect an admirable selection. It ought not to be passed over by any one having charge of young children. The selection has been made with care, and is perfectly adapted to juvenile needs. The authors are all poets of rank, which in a selection of this kind counts for much, since it is easy to find childish verses which are worthless from all points of view; but when poets write of childhood they invariably write well, if not their best.

PROFESSOR C. H. FIRTH ON THE TRAINING OF HISTORIANS.

By F. J. C. HEARNSHAW, M.A., LL.M.
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ON November 9th, Prof. C. H. Firth, the successor of Stubbs, Freeman, Froude, and York-Powell in the Chair of Modern History at Oxford, delivered his inaugural lecture. As reported in the *Times* of November 10th, it constitutes a declaration of principles and of policy of considerable interest and importance. It contains enough to show that Prof. Firth is not an enthusiastic disciple of Freeman, that he does not regard history as primarily past politics, and that he does not look upon it as "a true prophetic document," the chief function of which it is to give guidance concerning the present and the future. It also serves to indicate that he is equally far from being a devotee of Froude, who was impressed with the moral significance of history, and who went to so great a length as to say that "It is a voice for ever sounding across the centuries the laws of right and wrong," and that "one lesson, and one only, history may be said to repeat with distinctness, viz., that the world is built somehow on moral foundations." Prof. Firth seems to take the sterner and colder view of the continental historians that history is an end in itself, or at any rate that historians, as such, are not concerned with any end beyond, and outside of history itself; the view that, just as the manufacturers of weapons are concerned solely with the manufacture of weapons and not with the operations of war, so historians are concerned with the provision of an arsenal of organised and interpreted facts and not with the political and moral battles which may be waged with them. Prof. Firth laments that the large and powerful History School at Oxford, which numbers its two hundred or more candidates every year, should content itself with producing "well-informed politicians and journalists, good civil servants, and many useful persons in less conspicuous spheres," and that it should do practically nothing to train any of its numerous members to do original work, so that they may add to the world's store of historical knowledge. History has been regarded, he complains, as an instrument of general education, not as itself the end and object of specialised scientific training.

Lord Acton made much the same complaint, though less publicly, when he came to Cambridge eight years ago. His predecessor, Sir John Seeley, was an inspiring lecturer and a delightful writer, but to his students he tended to be cold, distant, and reserved. He gathered no band of disciples round him, he gave little guidance or direction in research, he founded no school; he regarded the Historical Tripos as the ideal training for the politician, and he looked upon Lord Rosebery as the ideal product of historical education. Lord Acton in 1896 began to attract to himself the abler young men of the University. He placed at their

disposal his unparalleled stores of knowledge, he showed them what work urgently needed to be done, he pointed them to sources of information, he helped them to read, to discriminate, to co-ordinate, and to compile—in short, he began the great task of training historians, and he re-organised the Historical Tripos in order to convert it from a machine for producing well-informed politicians to a machine for producing scientific historians. What Lord Acton attempted tentatively and with individual pupils eight years ago, Prof. Frith can boldly and openly proclaim as his purpose now. That he dare venture to do so is a happy sign of the times. It shows that a great transformation in current conceptions of history has been effected. History is regarded no longer as a department of literature, but as an exact science. The necessity for this change in conception was the main theme of the inaugural lecture delivered at Cambridge in the early part of last year by Lord Acton's successor, Prof. Bury. "It has not yet become superfluous," he said, "to insist that history is a science, no less and no more," and he added, "I may remind you that history is not a branch of literature," but that it is akin to geology and astronomy, and that it should be investigated by means of the same scientific method.

Prof. Firth, adopting this view, intends to introduce the "Seminar" system into the higher historical teaching of Oxford University. It is substantially the same system which Ranke adopted in 1824, when he was appointed assistant professor of history in Berlin. Ranke learned it from Karl von Raumer, a professor of mineralogy, who had applied it with much success to the training of mineralogists. Ranke had a genius for research, and a genius either for imparting his skill or for attracting those who already possessed it. Waitz, Giesebrecht, Sybel, Wattenbach, were among those who were trained in his "Seminar," and they all employed the same method of "practice courses in history" when they themselves became teachers. From Germany the method was carried to America, and it has done much towards the production of that able company of historians who now occupy the Chairs in the great universities of the United States. One of these newer historians, Prof. Ephraim Emerton, of Harvard University, thus writes: "Within these few years a very great change has taken place. The leaven of the German method has begun to work among us." Then he describes the "Seminar" system, and adds: "The method of original work remains as the indispensable supplement to whatever other means of instruction the wise teacher may employ."

It is this method of original investigation which Prof. Firth means to naturalise at Oxford in the hope of founding an Oxford school of research which shall do definite and systematic work for the extension of historical knowledge. He is going to begin with the period of English History, which he has made peculiarly his own—the Stuart Period; he is going to give a course of lectures on the authorities for the period; he is going to select one particular book—a portion of Clarendon—and gather a class of students whose business it will be to examine and elucidate the text with a view to the publication of a critical and annotated edition; finally, he intends to encourage members of this class to write dissertations on the history of the period in question, and he hopes that the fact that such dissertations may be used as means for obtaining the new B.Litt degree will act as an additional stimulus to students to undertake their preparation. Prof. Firth realises that many difficulties lie in his way. In particular, he perceives that under existing conditions of study and examination in Oxford it will not be easy to find half-a-dozen students with whom to start his "Seminar." But all who take an interest in the teaching of history in England will heartily wish him success, and will watch his experiment with the closest and most sympathetic attention.

THE NEW REGULATIONS FOR SECONDARY SCHOOLS.

ENGLISH LANGUAGE AND LITERATURE.

III.—THE TEACHER'S EQUIPMENT.

By J. H. FOWLER, M.A.
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I ONCE saw in an American magazine an advertisement which promised "a literary education within a week." It proved to be a prospectus of an epitome in one volume of "the fifty greatest books of the world, from Homer's 'Iliad,' B.C. 1200, to General Lew Wallace's 'Ben Hur,' A.D. 1880." I should be at least as presumptuous as the Transatlantic advertiser if I attempted, within the compass of a short article, to furnish the teacher of English literature with an equipment for his task. My ambition is, however, a more modest one: it is to set down some of the books that, in my own study, I have found useful, in the hope that I may make one or two suggestions that will be of use to others.

For we cannot realise too clearly that if the admirable intentions of the Board of Education in their new scheme for the teaching of English are to be fulfilled, the subject must be taught by those who are thoroughly well equipped for the task. It is an easy matter, with the help of one or other of the annotated editions so plentifully provided for us, to coach a form in a play of Shakespeare for a local examination. It is not by any means so simple a thing to teach literature in the spirit of the Board's new regulations. There is, indeed, one solution of the difficulty so obvious, that somebody, it is to be feared, will certainly adopt it; but it is one that ought only to be mentioned in order to be rejected. As the Board advise us not to put elaborately annotated texts in the hands of our pupils, we may occupy the English hour in dictating such notes to the class instead. So shall the last state of our pupils be worse than the first,

ıd Shakespeare be more odious to them than hen they read the commentators' notes for ıemselves.

No, if English literature is to be made attractive ı a class by means of the literature lesson, the ıacher must himself be an enthusiast for litera- ıre. He must himself have a genuine love and ppreciation of the right things, and be able to ive a reason for his admirations. Almost any ıtellectual interest will be directly useful to him ı his literature lessons—a knowledge of music, of ainting, of animals, of flowers, of history, of geo- raphy, helping him to give illuminative com- ents of the right sort. Above all, he should be terested in the human side of literature, valuing himself as an interpretation of life, and leading s pupils to value it in that aspect too.

The bare statement of such an ideal might well rve for an inspiration; but it is not an easy one live up to, and, instead of inspiring, it may nceivably depress some who feel themselves ıdequately equipped.

Yet where there is any honest love of literature ere is little reason for despondency. It is true ıt no one can give himself "a literary education thin a week." But it is surprising how much n be done in a year by the systematic and intelli- nt expenditure of a few minutes every day. In ıt space of time it would be quite easy, for stance, to master all the pieces in Palgrave's Golden Treasury" (First Series) and in Mrs. ırnett's "Little Book of English Prose," or r. Peacock's volume of prose selections in the World's Classics." To do this would be to gain me sense of the characteristics of English prose d poetry in each of the last four centuries, to serve the relations of literature to the age that oduced it, to lay the foundations of a true literary ucation. Nor would it be possible thus to soak eself in the very best of our national prose and etry without acquiring, consciously or uncon- iously, a standard by which to test all that esents itself to us as literature.

It is essential that the teacher of literature ould have such a standard. I do not mean that ought to follow the example of a lecturer on rgil who interspersed his notes on syntactical culiarities with an occasional but quite unemo- nal "Mark the pathos"; for the only effect of s upon his audience was a vague impression ıt they were to mark the pathos in order that ey in their turn might be marked by the ex- ıiner. Eulogies of style are not likely to carry ıviction to the minds of our pupils unless they e the spontaneous expression of our own feel- gs; in that case they may sometimes be invalu- le. What I mean is that no one can give sound idance in literature who is not in possession of mething like a sure standard for his own use.

Of other helps to the acquisition of such a stan- rd, a few may be mentioned here. Best of all, thout doubt, is a knowledge of the ancient eratures. Indeed, it hardly seems possible that man should be a competent critic of modern erature who is ignorant of the classical literature that went before it. Those who do not know Latin and Greek should at least read good translations of the "Iliad" and "Odyssey," of one or two Greek plays, of the "Republic" of Plato, and the "Aeneid" of Virgil. There is no need to draw up a list of the books in English literature which ought to be mastered; the Board's own list of books to be read in schools will itself suggest to many of us gaps that we should take an early opportunity of filling. But it may be useful to mention some of the books that will give guidance in critical study.

First I should place the two series of Matthew Arnold's "Essays in Criticism," especially the essay which he wrote as a general introduction to Ward's "English Poets." Many of the introductions to the individual poets in Ward's four volumes are very valuable, and so are some of the introductions in the corresponding volumes of "English Prose Selections," edited by Sir Henry Craik. The new edition of Chambers' "Cyclopædia of English Literature," a very different affair from the earlier editions, contains many studies by first-rate critics as well as excellent selections. Much helpful material for understanding the works of the writers treated of is to be found in the lives of the "English Men of Letters" series. It is a good plan to choose a particular period and steep oneself in that for a few months at least, reading the literature of the time and the biographies of the writers in connection with the general history. An admirable book, which will show a reader how to do this for himself with other periods, is Leslie Stephen's "Literature and Society in the Eighteenth Century," published just after the author's death. Prof. Saintsbury's "History of English Literature" abounds in criticism that is always interesting, whether one agrees with it or not, and Prof. Courthope's elaborate "History of English Poetry," of which four volumes have so far appeared, is of great value. The number of critical essays on separate writers available for the student is endless; but I cannot forbear to mention Hazlitt's "Lectures on Shakespeare," Bagehot's "Literary Studies," and Aubrey de Vere's "Essays chiefly on Poetry." As helps to a study of the *technique* of prose and verse I would recommend Dr. Mayor's little handbook of English metres, the late Prof. W. Minto's "Manual of English Prose Literature," and Abbott and Seeley's "English Lessons for English People."

In some of the books I have mentioned a teacher will find little material that he can directly use in his lessons. This is no argument against reading them. Anything that trains a man's own literary faculty will help to make him a better teacher of the subject.

The Board of Education have wisely chosen to leave teachers free to choose their own methods. In previous articles I have suggested a combination of methods—the reading of authors on a larger scale than has been customary with the minimum of comment from the teacher, and the elaborate study of occasional texts or portions of texts. The plan should be carried out, I think, with what

Bacon would call "an inclination to the benigner extreme" of reading without comment. But if English literature is at all to take the place of classics as a serious study and a mental discipline, we must not be afraid of applying to it occasionally something of the minute care that has been bestowed upon the classics. Mr. F. D. How, in "Six Great Schoolmasters," tells us that Dr. Bradley at Marlborough did not get through more than forty or fifty lines of Virgil in a lesson, and that once at least he only got through seven lines. But he quotes Sir Courtenay Ilbert as saying of these lessons, "You found that as Huxley's crayfish was made an introduction to all zoology, so the particular book or passage before you was serving as a guide to all Greek or Roman life, literature and art." I see no reason why, in the right hands, a lesson of Milton or Shakespeare should not be treated with the same minuteness, and this without killing the literary interest, but with precisely the contrary effect. But the application of this method will for the most part belong to later stages, to the sixth form and university. For pupils between the age of twelve and sixteen the most important thing is to secure that they shall read in sufficient quantity and sufficient variety such of the best literature as they are capable of assimilating.

MATHEMATICS IN THE ARMY ENTRANCE EXAMINATIONS.

By ALFRED LODGE, M.A.

Assistant Mathematical Master at Charterhouse; late Professor of Pure Mathematics at Coopers Hill.

THE new prospectus issued by the War Office is no doubt capable of a considerable amount of improvement in detail, but if such improvements as are found necessary or desirable are made it should be welcomed by those schools which have made it a part of their duty to prepare candidates for the Army. The most noticeable feature in the new departure is its evident desire to help such schools to the utmost, by giving great privileges to candidates who are able to procure a School Leaving Certificate on the lines laid down by the Department. Such certificate, once obtained, will be taken as sufficient evidence of a good general education, and will enable the candidate to proceed, unfettered, to the special examination required for the purposes of competition.

The demand for a three years' continuous training in the school before the candidate can secure this School Leaving Certificate appears to be too stringent. Many boys come to a public school at about fifteen years old, and they would therefore not be eligible as candidates for the school certificate till nearly eighteen years of age, although seventeen years of age is the limit laid down by the Department, and it is felt by teachers that many promising candidates would be ready for such an examination even before the age of seventeen. The preliminary training at preparatory schools is in most cases so good as to appear to make it desirable that such a training should be included in the three years' requirements, so that not more than two years should be needed at the public school. This modification is being strongly advocated by some of the schools, and it is to be hoped that the War authorities may see their way to modify their conditions to meet this urgent request.

With regard to subjects, there is a feeling that classics are being handicapped in comparison with modern languages, and some schools are apparently already giving up Latin in their Army classes and taking up French and German exclusively in its stead.

But with regard to mathematics, the lines laid down appear to be excellent in every way, so much so that it may well be hoped that in this subject it will no longer be necessary to teach the Army candidates separately from the other boys who are doing special mathematics above ordinary standard, but below scholarship attainments.

A committee of the Mathematical Association has lately been engaged in drawing up suggestions for a course of advanced mathematics such as would be suitable as a preliminary course for all boys between fifteen and seventeen who are preparing for any examinations in which proficiency in mathematics is requisite, and the lines laid down by the Army authorities are remarkably in accord with the recommendations of that Committee. All means possible should be taken to make this unification of mathematical work an accomplished fact, as the waste of time involved in teaching—as often at present—different candidates in different classes, according to the examinations for which they are working, is lamentable in the extreme. The endeavour should be to induce all educational bodies to recognise the School Leaving Certificate in mathematics as a guarantee of general mathematical ability and satisfactory grounding in the foundations of the subject.

Of course, in the case of scholarship and other competitive examinations a higher standard will of necessity be asked for, but as a mere qualification for *entrance* on any course of professional or other special work the School Leaving Certificate should be held as sufficient evidence of good grounding.

If this can be managed, we shall see all boys at public schools who show mathematical ability working along the same lines up to their passing this leaving examination (especially if this can be taken earlier by the cleverer boys), and *then* specialising for scholarships, or the Army competitive examinations, or such other work as they need.

The complete mathematical requirements, as indicated in the Army prospectus, are as follows:

A.—FOR THE SCHOOL LEAVING CERTIFICATE.

ELEMENTARY MATHEMATICS.

Arithmetic.—The ordinary rules, with applications more especially to the mensuration of plane figures and solids. Practice in the metric system and the use of decimals is

approximate calculations, with contracted methods, are specially insisted on, but the extraction of cube roots and work in recurring decimals is not required.

Neatness and accuracy are expected and methods of solution must be clearly indicated.

There will be no objection to the intelligent use of algebraic formulæ and symbols.

Geometry.—The elements of geometrical drawing and practical geometry. The substance of Euclid, Books I. to III., and such properties of similar figures as are needed for plan making, map drawing, and simple mensuration problems.

Algebra to simple quadratics, with practice in graphs, particularly in connection with linear and quadratic functions.

The candidate is expected to understand the fundamental principles of his work, and to be able to apply it readily to practical problems; to be able to work out roots of equations to a few significant figures, and to be accustomed to test the accuracy of his results by substitution.

PRACTICAL WORK.—The candidate must show evidence of having been trained in

Measurement of lengths, use of verniers, calipers, micrometer, and screw-gauge spherometer. *Measurement of angles. Measurement of areas*, by dimensions, by squared paper, by weighing; area of cross-sections of a tube, calibration of a tube, &c.

Measurement of weight, use of balance. Principle of Archimedes—volume by weighing and specific gravity.

This is all that the Army prospectus requires for the School Leaving Certificate, but there is of course no reason why the schools themselves should not ask for optional higher papers in the same examination for the sake of the cleverer boys who are able before seventeen (or such earlier age as may be fixed for the examination) to proceed to the further work required in the subsequent competitive examination.

B.—FOR THE COMPETITIVE EXAMINATIONS.

Here, there is a great difference between Sandhurst and Woolwich. Mathematics is an optional subject for Sandhurst candidates, but is obligatory for Woolwich up to a certain point (Mathematics I.), a further course (Mathematics II.) being optional for both Woolwich and Sandhurst. In the case of Woolwich candidates, however, it is very desirable that Mathematics II. should be taken, as proficiency in mathematics is absolutely essential to success in the Woolwich course. The two courses are as under:—

MATHEMATICS I.

[Obligatory for the Woolwich competition, but optional for Sandhurst.]

Arithmetic.—As in elementary mathematics, with more difficult questions and exercises involving the use of 4-figure logarithms, and the use of the slide rule.

Geometry.—Geometrical drawing and practical geometry of plane figures including the use of marquois and other scales.

The substance of Euclid, Books I. to VI., with the algebraic treatment of proportion, avoiding special treatment of incommensurables.

Algebra.—As in elementary mathematics, together with indices and the simpler properties of surds; graphs of the simpler algebraic functions; theory of quadratic equations; the use of graphs in solving equations and in illustrating and solving practical questions; rate of variation of a function, and gradient of a graph; graphic interpolation.

Grasp of elementary principles and readiness in practical applications will be looked for, but great skill in analytical transformations will not be demanded.

Trigonometry.—Up to and including the solution of plane triangles; graphs of trigonometrical functions; use of 4-figure tables.

Readiness in straightforward practical applications is required, but no great analytical skill is demanded.

Dynamics.—Graphical proofs of formulæ for uniformly accelerated motion—impact, work, energy, circular motion.

Statics.—Composition and resolution of forces; parallel forces; centre of gravity; three force problems; friction; the mechanical powers, *e.g.*, lever, wedge, pulleys, &c.

Practical Work.—Experimental verification of the above theoretical work, such as measurement of velocity, impact, work, energy, &c. Exercises in drawing useful graphical demonstrations; construction of the mechanical powers.

MATHEMATICS II.

[Optional for Woolwich and Sandhurst competitions].

Includes Mathematics I. and

Geometry.—The substance of Euclid, Book XI., with application to mensuration of solids. The elements of solid geometrical drawing.

Algebra.—Elementary knowledge of the use of indeterminate coefficients, especially with partial fractions. A working knowledge of the elementary infinite series for $(1+x)^m$, e^x, $\log(1+x)$, $\sin x$, $\cos x$, $\tan x$, and their use in approximate calculations, especially in finding the slope at a given point of the graph of a function.

Differential and Integral Calculus.—A working knowledge of the notation and fundamental principles in so far as they can be illustrated graphically, with simple applications to the properties of curves, to turning values, and to easy mechanical and physical problems.

[The fuller discussion of geometrical applications to be treated under co-ordinate geometry].

Co-ordinate Geometry.—Elementary principles and methods, with straightforward applications to the straight line, circle, ellipse, parabola, hyperbola, cycloid, catenary, logarithmic spiral, and other common curves: also to the straight line and plane in three dimensions.

[The methods of the calculus may be used freely. Systematic knowledge of conics (either geometrical or analytical) is not required; thus the general classification of curves of the 2nd degree would not be asked for].

Mechanics.—Elementary statics of liquids and gases.

Practical Work.—The work mentioned in Mathematics I., together with centre of gravity, centre of pressure, specific gravity, barometer, Boyle's law, pendulum, "g"; impact, and coefficient of restitution; compressibility and rigidity; Young's modulus by stretch and bend.

With regard to this optional higher mathematics (Mathematics II.), it must be understood (as already suggested) that Woolwich candidates who intend to do well after reaching Woolwich should consider it as practically an obligatory subject.

In carefully considering the work laid down for the above mathematical courses, it is obvious that the intention has been to require such work as would best fit a candidate for the ready application of such mathematical knowledge as he has, and especially to secure that he shall be able to arrive

at some solution of practical problems graphically when other methods are beyond him. In all this the War Office are proceeding along the lines already strongly advocated by the Mathematical Association and other educational bodies, and there is nothing in the whole range of this work which should make it necessary, or even desirable, to differentiate Army students of mathematics from others, or to give them a separate course.

With regard to text-books, so many good text-books have lately been written laying stress on graphical methods that almost any choice among them would be satisfactory. The chief danger to be avoided is that of allowing candidates to rest satisfied with a graphical solution of a problem when its analytical solution should not be beyond their powers. In most cases the graph should illustrate and assist the analytical work, but should only supersede it when the analytical method would be too hard or too lengthy. But it must not be forgotten that graphical illustration of such things as relative motion, the relations between connected variables, and practical problems, is usually far more interesting to a student than mere analysis without such pictures, and often leads to a quicker comprehension of the questions involved. I think it is a pity that such work is usually done on elaborately divided paper (into tenths of inches, or millimetres), when usually all that is needed is paper ruled with faint blue squares about a quarter of an inch wide, which would be suitable for the written work as well as for the diagram, and if always used for the written work would be always ready for such diagrams as were incidentally needed. Such paper has been used (in the form of books) for some years at Coopers Hill, and also, I believe, at the Royal College of Science, and could, I should imagine, be procured at any wholesale stationer's at a quite cheap rate.

Another point to be noticed in the higher syllabus is that the calculus is mentioned before co-ordinate geometry, and that in the latter subject the use of the methods of the calculus is advocated where it would assist the work. This, again, is in accordance with the recommendations of the Mathematical Association, and it is to be hoped that the era of "calculus dodging" is at an end.

With regard to the practical work required, nearly all teachers recognise the importance of such work, and there are few good schools now where it is not taught to all mathematical and science students. A detailed syllabus of suggestions for such work, especially in mechanics, from some recognised authority would be a great boon to teachers.

The last word I wish to say on the matter is that I hope schools may find it practicable to unify their mathematical teaching so as to take Army candidates with the other mathematical pupils instead of, as sometimes now, treating them as a class apart to be fed with smatterings of mathematical knowledge served up in "practical form" without thorough grounding in fundamentals.

THE STUDY OF PEDAGOGICS BY CORRESPONDENCE.

REFERENCE was made in an article, by Mr. A. T. Simmons, published in the December, 1903, issue of The School World, to the success which had followed the inauguration of a method originally outlined in a letter to this periodical in September, 1903, for the study by correspondence of the theory and history of education. During the first half of the present year several clubs studied in this way important works by masters in education, and among the books chosen may be mentioned Herbart's "Letters and Lectures on Education," Rousseau's "Emile," James's "Talks to Teachers on Psychology." Other clubs are now engaged in a similar way with standard works on education.

Letters have been received from schoolmasters and schoolmistresses in different parts of the country testifying to the interest and value attaching to the exchange of opinion on educational topics which is encouraged by correspondence clubs, and expressing the hope that it might prove possible to establish more similar clubs.

Experience, however, has taught many things which were not foreseen at the beginning. For example, it has become evident during the work of the year that many teachers, willing and anxious enough to join a club and to benefit by the comments of more experienced colleagues, are reticent and feel unable to contribute remarks to the discussion of the club. Evidence is, in fact, available that many such modest teachers have refrained from joining a club because they feel their powers of expression to be limited. Yet it is just these younger teachers, who desire to study, and, so far as they can, make use of the results of the experience of older schoolmasters and schoolmistresses, who are most likely to derive assistance from the correspondence club, and it is in their interests that a modification of the original scheme has been made. Should it prove desirable, a column or more of each issue of The School World will be devoted during term time to the furtherance of the objects of the correspondence club.

It is proposed, therefore, that clubs like those which have been in operation already shall be arranged as the demand arises. That is to say, any six teachers, wherever they may live, who desire to study jointly a given book on education may form a club, one of the members acting as honorary secretary. In the matter of the selection of a book for study, reference may be made to an article by Prof. Foster Watson, entitled "A Select Library of Pedagogy," which was published in these columns in July, 1904. There appears to be no reason, moreover, why many such clubs should not be formed in different centres without the intervention of The School World, but it would be of great interest to our readers if the honorary secretaries of the clubs which may be established would inform us of the formation of reading circles

o that the progress of the movement may be hronicled.

To aid any teacher who may propose to try o form a club, it may prove helpful to reprint the orm which has been found to work satisfactorily hen circulated among members of a club.

ORRESPONDENCE CLUB FOR THE STUDY OF PEDAGOGICS.

BOOK FOR STUDY.—(*Here insert title, author, publisher, and rice of the book selected.*)

LIST OF MEMBERS.

(*Here give the list of members, with addresses, the name of the lon. Sec. being printed first.*)

PROCEDURE.

(1) Week by week each member studies the portion of the ook selected (see below.)

(2) Any remarks, suggested by the member's experience and ading, on the chapters for the week to be written on sheets of aper—a separate sheet, with the member's name and address, r each subject dealt with. One side only of the paper should : used. Similarly, any difficulty or points requiring further ucidation should be written down.

(3 All such sheets to be posted each Monday to the Hon. ec. who will add any helpful remarks to all or any of the sheets id post the whole batch to member No. 2. Member No. 2 ill keep the sheets not more than two days, add further coments where possible, and post the budget to member No. 3. ember No. 3 adds his remarks in the same manner, and after e same interval posts the sheets to member No. 4, and so on. ember No. 6 will return the batch to the Hon. Sec.

(4) If considered desirable the bundle of sheets will be rculated a second time, so that all members may see what marks have been added.

(5) The Hon. Sec. will then send each member's sheets to m with the remarks of other members of the club, and for this irpose members should, in sending to the Hon. Sec. on londay, enclose a stamped addressed envelope.

WEEKLY DIVISIONS OF THE SELECTED BOOK.

The Hon. Sec. will insert here the amount of reading for each eek during the period over which the reading of the book is to xtend.

First batch of remarks to be sent to the Hon. Sec. on Monday, , 1905.

In addition to clubs formed by enterprising achers in the manner described, or arranged by s so as to include those readers who may write) express their desire to join a reading circle, it is roposed to form a *School World Club* with unmited membership, to be conducted by means of ie monthly column already mentioned.

Any reader may be a member of this club, and ill be expected to read week by week the portion f the selected book prescribed. All comments iembers are able to make at any time on the prescribed reading, or any question they may wish to ave answered, should be addressed to the Editors f THE SCHOOL WORLD. From the remarks sent ı and from the questions asked, a selection will be ıade for publication in a forthcoming issue of this aper. It is hoped in this way to give an added est to the systematic reading of pedagogic literaıre, and eventually to develop a widespread ıterest in the study of the literature of education.

THE SCHOOL WORLD CLUB.

The first book to be read by members of this club, which is open to any of our readers, is :

"Essays on Educational Reformers." By R. H. Quick. (Longmans.) 3s. 6d.

WEEKLY DIVISIONS OF THE BOOK.

Week	I.	Chapters I.-III. (inclusive).	Week VIII. Chapters XIV. and XV.
,,	II.	Chapters IV. and V.	,, IX., X. & XI. } Chapter XVI.
,,	III.	Chapters VI.-VIII. (inclusive).	,, XII. Chapter XVII.
,,	IV. & V.	Chapters IX. and X.	,, XIII. Chapters XVIII. and XIX.
,,	VI.	Chapter XI.	,, XIV. Chapter XX. and XXI.
,,	VII.	Chapters XII. and XIII.	,, XV. Chapter XXII and Appendix.

Comments and Questions on the reading of Weeks I. and II. to be sent to the Editors on or before December 16th, 1904; those on Weeks III., IV., and V. on or before January 16th, 1905.

THE CHEMISTRY OF DAILY LIFE.

III.—AN ELEMENTARY COURSE OF WORK.

(*Concluded.*)

By F. R. LEYLAND WILSON, M.A.
Charterhouse.

THE last article was concluded with a sketch of some experiments showing the *rôle* played by plants in preventing the accumulation of carbon dioxide in the air. They may be followed by others proving that expired air contains both carbon dioxide and moisture.

The presence of dissolved air in water having been shown, the breathing of fishes may be introduced and the necessity for having green plants in aquaria will be readily understood.

At this point a few simple experiments on fermentation may be done :—

Experiment. Some brown sugar is dissolved in water in a 300 c.c. flask. A very small quantity of brewer's or German yeast is put into the cold solution, and the flask is fitted with a cork carrying a glass tube bent twice at right angles. The right-angled tube passes through a doubly bored cork into a flask containing lime water, a guard flask to protect the lime water being arranged as in Fig. 1. After a few days the lime water shows that carbon dioxide has been produced and the air in the flask will be found to be unable to support the burning of a taper. A drop of the liquid from the flask A is examined under the microscope and the presence of the yeast cells is noticed. The rest of the liquid in the flask A is distilled and alcohol is obtained, its inflammable character being noticed.

It will be useful to examine some of the properties of alcohol at this point, using ordinary methylated spirit for the purpose. The combustion of alcohol has already been shown to yield water and carbon dioxide.

Experiment. Show the solvent powers of alcohol, using paraffin wax, resin, &c.

Experiment. Some methylated spirit is mixed with water and the cloudiness due to admixed impurities is observed. The

same experiment is done with pure alcohol and the difference is noticed. As a further experiment, paraffin oil may be mixed with pure alcohol, and on the addition of water a cloudiness will be noticed, similar to that obtained with methylated spirit.

The study of oxides may now be resumed. Some acquaintance has already been gained with the oxides of carbon, phosphorus, magnesium and others, and an opportunity occurs for explaining the difference between elements and compounds, and for showing in what respects chemical and physical changes differ. An experiment on the formation of copper sulphide from its elements shows many useful points, such as the differences between mixtures and compounds, the heat given out in combination, combination in definite proportions, &c.

A further study of oxides may now be made, a comparison being drawn between the properties of the oxide and those of the elements of which it is composed.

The oxides of lead, zinc, copper, magnesium, sodium, carbon, sulphur and phosphorus, should

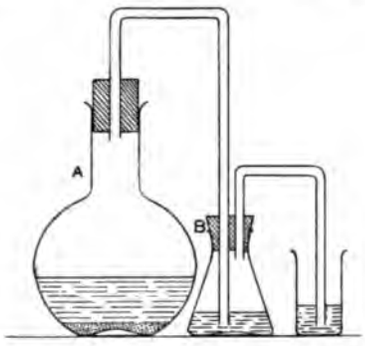


Fig. 1.

be made and described, and their solubility in water examined, also the action of the solution with litmus. The results of these experiments may be recorded in the form of a table.

The distinction between acid and basic oxides having been arrived at, the common mineral acids may be examined and the formation of salts by the neutralisation of acids by basic oxides naturally follows. Such salts as sodium chloride, zinc sulphate and lead nitrate give good results, and the neutralisation of lime water by carbon dioxide may be used to show the nature of the white solid obtained in testing for carbon dioxide.

The action of acids on metals and the preparation of hydrogen may be taken at this point, and the usual experiments to demonstrate its properties are done.

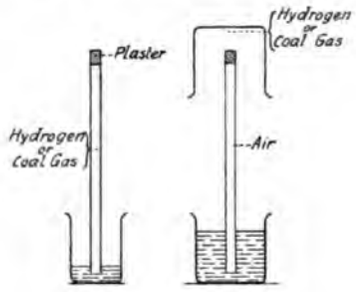
Since the phenomena of diffusion afford a useful introduction to the idea of the molecular structure of matter, it is well to lay some stress on this point. The extreme lightness of hydrogen having been shown, an experiment to show its escape from an inverted jar may be done.

Experiment. An open jar of hydrogen is supported mouth downwards on the ring of a retort stand; after five minutes the absence of hydrogen in the jar is shown.

Experiment. A similar experiment is done with coal gas.

Experiment. A jar of hydrogen is inverted and pla mouth to mouth with a jar of carbon dioxide. In five min time the upper jar is removed and the presence of carb dioxide in it can be shown by the usual test.

Experiments on the passage of gases throug porous substances may be done, a plug of plast of Paris forming a suitable septum.



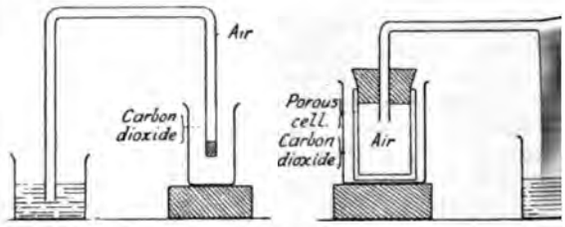


Fig. 2.

Experiment. One end of a tube 0·5 cm. in diameter is cl by a plug of plaster (Fig. 2). As soon as the plaster has and is quite dry the tube is filled with hydrogen, and is verted in a basin of water. The water is observed to rise the boys are invited to give explanations. The usual re given will be that the hydrogen escapes owing to its light and further experiments are done to find out if this explan is sufficient.

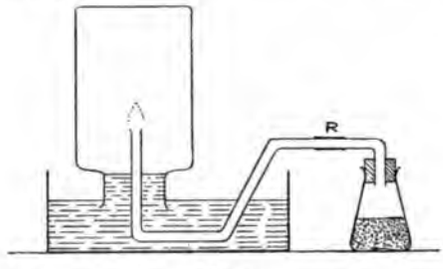


Fig. 3.

Experiment. The diffusion tube is filled with air and a vessel of hydrogen is inverted over the end containing the plaster, the open end being immersed in a basin of water as before (Fig. 2.) It will be noticed that the water is driven out of the tube instead of rising. The same experiment may be done using coal gas instead of hydrogen.

An experiment may now be done to find out if the gases inside and outside the tube are both passing through, but at different rates.

Experiment. A beaker is filled with carbon dioxide and

rous cell fitted with a cork carrying a double right-angled e is placed in the beaker (Fig. 4). The end of the tube dips) a vessel of water. The air at once begins to escape from cell and the water rises in the tube. The presence of carbon tide in the cell can easily be shown by drawing the air from inside of the cell through a wash-bottle of lime water.

A summary of the results obtained may be made, l will show that gases have the power of moving parently in opposition to gravity, and that heavy ses move more slowly than those which are hter.

The explanation of diffusion by the molecular ory of gases may now be given, the origin of the ssure of gases and their expansion under the luence of heat being treated from the same int of view. Later, when it becomes necessary introduce the atomic theory, the ideas gained m the study of the diffusion of gases will be nd to be of great value.

Incidentally, the fact that the heavier gases of e air do not accumulate at the surface of the rth may be explained.

The study of the properties of hydrogen may w be resumed. Experiments on its explosive operties will show that the presence of air is cessary, and an idea of that particular proportion air to hydrogen which gives the most explosive ixture may be gained by making mixtures in rious proportions and noting which gives the udest explosion. Other experiments on the pro uction and collection of the moisture produced hen hydrogen is burned may be done, the impor nce of drying the hydrogen being impressed. o show that a part of the air is used when ydrogen is burned the following experiment is itable:—

Experiment. A small flask is fitted with a cork, right gled tube and glass jet for burning hydrogen, as shown in . 3. The flask is half-filled with granulated zinc and a id evolution of hydrogen takes place on the addition of acid. soon as the hydrogen is pure it is ignited at the jet, the jet ng arranged in a trough of water as shown in the diagram. wide-mouthed bottle is pushed down over the flame into the er and if a large flame of hydrogen is burning on the jet it l continue to burn for some seconds and the water will rise he bottle. At the moment when the flame goes out the rub connection R is closed by pinching and the jet is quickly moved from the bottle without allowing air to enter it. The tle is then closed with a glass plate and removed from the ugh, and after the gas which is left in it has been tested h a burning taper the volume of water in the bottle is asured, and so the volume of oxygen used by the hydrogen is nd.

An examination of the solution from the action sulphuric acid on zinc should be made, a crys lline specimen of the salt being prepared.

The idea of substitution of one element by other may be further illustrated by experiments the action of metals with metallic salts. For ample, the action of zinc on a solution of copper lphate or of zinc on a lead salt may be shown.

Experiments may be done on double decomposi n, some of the salts which have already been epared being used to illustrate changes of this ss.

Experiment. Cold solutions of lead nitrate and common salt are mixed. The liquid is filtered and the filtrate is evaporated, and crystals of sodium nitrate are obtained; the lead chloride is redissolved in hot water and on cooling is obtained in the form of needle-shaped crystals.

The preparation of caustic soda by boiling washing soda with lime might be taken in this connection, the clear filtrate being evaporated to dryness and the washed precipitate identified as a carbonate by treatment with hydrochloric acid. Further experiments might be done with the caustic soda in connection with the properties of alkalies as a class, such as its action on fat, whereby a soap is produced (the nature of soaps will be referred to later in connection with the hardness of water) and the preparation of ammonia by heating caustic soda solution with sal-ammoniac.

The action of dried hydrogen on heated metallic oxides should be taken at this point, the formation of water and a metal being noted. The method of finding the composition of water by weight follows, and in this connection the first law of chemical combination may be mentioned.

The reduction of metallic oxides by charcoal may find a place here, one of the simpler processes of obtaining a metal from its ores being taken as a class-room subject. A further study of the properties of water may now be made, such facts as have already been discovered being recalled and discussed. The presence of dissolved matter in tap water introduces the question of hardness in waters.

The characters by which a hard water is known having been arrived at, the number of drops of a solution of soap required to produce a lather in equal volumes of tap water and distilled water respectively are determined.

Experiment. Some tap-water is boiled and the numbers of drops of soap solution needed to produce a lather in equal volumes of boiled and unboiled water are compared.

Reference having been made to the presence of dissolved gases in water, the influence of carbon dioxide in causing the solution of limestone may be explained and experiments may be done on the point.

Experiment. Some lime-water is put into a flask, and a stream of carbon dioxide, obtained either by the action of acid on marble or from the breath, is passed through the lime water. The formation and final solution of the calcium carbonate is observed. The clear or nearly clear solution is boiled and a deposit of solid is obtained. At the same time the gas given off from the liquid may be shown to be carbon dioxide by the usual test.

The solid deposited at the bottom of the flask may be compared with some crust obtained from a boiler or a kettle, the effect of pouring some acid on to each being noted, the gas given off being recognised as carbon dioxide by the lime-water test. The fact that the whole of the hardness is not removable by boiling serves to draw attention to the fact that hardness is not always of the same kind.

Specimens of permanently hard water and of water showing temporary hardness are made, the first by the addition of a small quantity of a solution of magnesium sulphate to distilled water,

and the second by breathing through a dilute solution of lime-water; 10 c.c. of each is boiled and the hardness before is compared with that after boiling.

Similar comparisons are made of the hardness before and after the addition of a small quantity of lime water to equal volumes of the two solutions. Exactly similar experiments are done after adding a solution of washing soda. The results of these experiments should be compared, and the methods most suitable for the removal of each kind of hardness will be understood. The origin of the white curdy solid, formed when soap is mixed with hard water, still requires explanation, and this necessitates some knowledge of the nature of soaps.

The study of the changes which take place in the manufacture of a soap is not suitable for beginners. However, some experiments may be done to show the nature of the soap itself.

Experiment. Some common yellow soap is cut up and placed in a beaker, the soap is covered with water and is heated nearly to boiling. Hydrochloric acid is added in small quantities at a time until, after stirring, all lumps of unchanged soap have gone and the liquid is strongly acid. The fatty acids will now be floating on the surface of the liquid in the form of an oily layer, which will solidify on cooling and may be removed from the liquid and spread on a porous plate to dry. When it is quite dry the melting point may be determined.

The watery liquid from which the fatty acid have been removed is evaporated and the crystalline solid obtained may be shown to be common salt.

Experiment. A solution of yellow soap is mixed with Epsom salt solution and the curdy solid is separated from the liquid, and after washing is treated with hydrochloric acid; the mixture of fatty acids is treated in the same way as in the previous experiment and the melting point is taken. The melting points of the substances obtained in the two experiments will be found to be the same, which suggests their probable identity. (The mixture will consist presumably of palmitic and oleic acids, and the melting point will not be quite definite—sufficiently so, however, for the purpose of the experiment).

The watery liquid is treated in the same way as in the previous experiment and a crystalline salt may be obtained from it.

If some of the mixture of fatty acids is warmed with caustic soda a solution of soap is obtained, a fact easily recognised by the readiness with which it forms a lather when it is shaken.

In bringing to a conclusion this sketch of a course of practical work it must be pointed out that no attempt has been made to treat the chemistry of daily life in an exhaustive manner, and indeed, within the limits of space imposed such a course would have been impossible. Many of the facts of every-day experience are quite unsuitable for elementary treatment, and only such material has been used as can be made of educational value by connected treatment.

The Light Princess. Edited by Greville MacDonald. 82 pp. (Fifield.) 6*d.* net.—It is a good idea to edit Dr. George MacDonald's fairy tales, which were such an unfailing source of delight to the last generation, in a handy form, which for cheapness and good illustrations and printing must commend itself to the present one. We own that a more substantial cover would have seemed to us better adapted to the finger exploits of extreme youth; but such as we have it, this volume is worthy of commendation, and we hope to see more of the series.

THE TRAINING OF SECONDARY SCHOOL TEACHERS AT THE UNIVERSITIES.

XI.—ST. ANDREWS UNIVERSITY.

SINCE its foundation some five hundred years ago the oldest university of Scotland has been actively interested in the training of teachers. In the old days there was no hard and fast line between the training of the teacher of the parish school and of the grammar or secondary school. Men of high academic standing were to be found equally in both, and the only training was the Arts course in the University, supplemented in many cases by the Divinity course. In time training became practically necessary for the teacher of the elementary school, but the Master's degree still remained the only recognised certificate of fitness for the teacher in the secondary school.

In 1876, however, the Bell Chair of Education was founded, and the University began to provide a course of lectures on the Theory, History and Practice of Education with a view to the training of teachers for both elementary and secondary schools.

A certain amount of practice in one or other of the schools of the city used to be arranged for, but there was no definite scheme of training which demanded a certain fixed minimum of practical teaching. About eight years ago a local committee, consisting partly of members of the University and partly of representative members of the community, organised, in addition to the work done by the Chair of Education, a scheme of practical training for students who were preparing for the career of teachers in public elementary schools.

Now that there is a demand for technical training even in the case of secondary-school teachers, the advantages of this scheme are offered as part of the training for the secondary school. Arrangements are in progress for the institution of a diploma for secondary teachers, but until these are completed the following opportunities are available for those who desire a certificate of attendance upon a course of practical training. The class of Education may be taken either as one of the qualifying classes for the degree of M.A. or as a post-graduate class. The professor delivers a course of one hundred lectures dealing with the aim and meaning of education, the foundations and essentials of method, the application of principles to practice, child study, school management, school hygiene, the history of education, and the study of its modern developments.

He also conducts practical tutorial classes, and exercises a general superintendence over the practical training. The practice in teaching is divided into two parts, and extends over a period of one year, divided into three terms.

I.—ELEMENTARY SCHOOL PRACTICE.

The secondary-school student may have devoted special attention to some one subject like classics

or mathematics, and by gaining Honours or special distinction therein he may aim at being a specialist in that subject—a classical master or a mathematical master. But even *he* is better for seeing how methods of teaching have developed in elementary subjects, and how large classes are managed with ease. Such students are expected to devote one term of ten weeks—eight hours per week—to observation and practice in the Burgh School, or one of the other elementary schools.

Students who have not taken Honours or special distinction in one subject, and who may become masters or mistresses of junior forms, and teach the lower stages of several subjects, are expected to spend some additional weeks in the elementary school.

Both classes of students must attend the criticism and model lessons, take part in the discussions, and hand in carefully prepared notes of lessons.

II.—Secondary-School Practice.

After the elementary practice has been gained, students pass on to the observation of methods and management in the secondary school, and to practise in the subjects which they specially profess. Honours students spend two terms and Pass students at least one term in this part of their preparation.

By arrangement with the governors and headmaster of the Madras College, an endowed secondary school of high standing, good opportunities can be obtained for the observation of all the various stages of secondary work and for teaching practice. There is a kindergarten in connection with the school, and the upper department has both a classical and a modern side. Drawing, music, and manual work are also taught.

The rector of the school and the senior masters of the different subjects supervise the students and assign to them the work they are to do.

The professor of education co-operates with them in all practicable ways, and the other professors are willing to give every assistance in their power. Criticism and model lessons are understood to form part of this period of training also.

Professional Subjects.

The students in training may also avail themselves of the courses of lectures and instruction in non-university subjects which have a close bearing on school work. These are provided by the local committee for the benefit of King's students and others in practical training. Phonetics, drawing and brushwork, singing, physical exercises and drill, are among the subjects thus provided for; and there are additional classes for cookery and other subjects in which women students are specially interested.

The fee for the full course in all these subjects and for practical training in the elementary schools is £5. But the classes may be taken separately, and the practical training in the schools can be taken alone. If taken separately, the fee for each class is one guinea.

Practice in the secondary school is a separate charge.

The University Court has recently sanctioned a special summer course of lectures on the Physiology of the Nervous System, which are meant to have a particular bearing on the work and hygiene of the school. There is also a short course on the physiological basis of physical exercise, introductory to the practical instruction in that subject.

Athletic and Gymnastic Training.

The University of St. Andrews is well situated and equipped for the training of the secondary-school teacher on the physical side. In view of the increasing attention which is being paid to physical training, it may be well to mention some of the opportunities which students enjoy of acquiring a practical knowledge of games, gymnastics, and other organised forms of exercise.

The famous golf-links are open for play free of charge. There are clubs for football (both Rugby and Association), cricket, tennis and hockey. The University possesses an excellent field for athletics, and a pavilion, both worthy of their donor, Mr. Carnegie.

All the clubs are affiliated to the Athletic Union, which exercises a general control, and so distributes expenditure that no game needs to suffer from lack of funds. The fee for membership of this union, which admits to the privileges of all the athletic clubs, is only 6s. 6d. per annum.

A large, fully-equipped new gymnasium is just approaching completion, and is quite close to the class-rooms.

In summer there are exceptional opportunities for swimming. There is also in connection with the University a company of Artillery Volunteers, and the members have the advantage of instruction in military drill and in carbine and rifle shooting.

Educational Societies.

Among the numerous University societies which meet for discussion and friendly intercourse there are at least two which have a direct bearing on the training of the teacher. The Education Society meets regularly during the winter session for the discussion of educational questions, either theoretical or practical. Lectures by men of eminence in the educational sphere are also given at some of the meetings.

"La Société Française" holds fortnightly meetings for debates and lectures. Every alternate meeting is of a social nature, and is intended to give opportunities for French conversation. The Musical Society and the Shakesperian Society have also a claim to attention in connection with the training of teachers.

It is worth noting that women students are members of nearly all the college societies. They are also able to enjoy a game at golf, hockey, or tennis, and become expert at other kinds of physical exercise for a very small outlay.

All these are important factors in the training of the secondary teacher.

WELSH NATIONAL CONFERENCE ON THE TRAINING OF TEACHERS.

THIS conference, held at Shrewsbury on November 10th and 11th, was called conjointly by the University of Wales and the Central Welsh Board for Intermediate Education. The object was to bring together representatives of every type of educational institution, together with representatives of every type of educational administrative agency, in the principality. The meeting was in its representativeness a complete success. Almost all, if indeed not every educational local authority was actually represented in the attendance by one member or more. Nearly all the secondary schools had teachers in attendance, and there was a representation of the elementary teachers, one of whom, the President-elect of the National Union of Teachers, Mr. Tom John, read a paper. Probably there has never been so representative a gathering in Wales on so technical a subject as that of the training of teachers. It was a Welsh national educational parliament. The speaking was up to a high level. The number of aspects of the training of teachers, primary and secondary, was so diverse and comprehensive that those present for the two days' conference went through a course of instruction in the problems of organisation, administration, theory and practice of education, such as probably could scarcely have been compassed in subjects regarding training by a complete course in education in two or three training colleges combined in the whole course of a year. The contact of the professional minds with lay minds was invigorating in a high degree. For the permeation of university, secondary, primary educational ideals, and the attempt to embody them in practice by practical teachers, so that those aims become part of the popular consciousness, is all part of the new Welsh democratic movement in education. The plea made by Mr. Darlington, that the new organisation of a national system of education in Wales should have regard to the needs of Wales, and that teachers should have a curriculum which recognised these needs, is, of course, largely the implication of a separate organisation, whilst at the same time the eloquent demand of Mr. Lewis Williams, of Cardiff, a Welshman of the Welsh, that the whole question of training should be looked at in no narrow view of Wales for the Welsh, but from the broadest standpoint of national patriotism, was received with enthusiasm by the conference. Mr. Williams also made a much appreciated point in speaking of the Government as a good Samaritan in affording twopence for this great purpose, but he reminded all present that the "oil and the wine" had been omitted.

The first day's morning session was devoted to the distinctive aspects of the problem of the training of teaching as it presents itself in Wales. Rarely has the academic representation shown to such advantage in the statesmanlike suggestions as to organisation as was revealed in the paper of Principal Roberts, a paper which is likely enough to remain as a historic document in its forecast of the best lines of training development in Wales. Except that, perhaps, there was not sufficient emphasis on the importance of the *highest developments* of a school of education in each of the constituent colleges, a curious omission coming from the principal of a college, and a former vice-chancellor of the university, the paper was truly admirable, for it showed a keen grasp of the idea of the unity of the teaching profession from the top to the bottom, and the fundamental unity of the teaching process, and the principles underlying it, together with the diversities in application to specific purposes, such as probably was unequalled in the whole of the following speeches.

Throughout the conference, the university was regarded too much in the light of an institution which is concerned solely with the work of a training college, except by Prof. Findlay, who good-humouredly hoped the professors of the colleges would never be teachers, but he was promptly called to book. The feeling of the conference, however, was absolutely clear. The training of teachers pre-eminently must be in the hands of the university, both for primary and for secondary teachers, and it must in the beginning be accommodated to the present state of things. But with one absolute condition, emphasised with no possibility of mistake, no student is to be received into primary training in a university college who has not passed the matriculation or other equivalent examination, and for secondary training, the condition equally emphasised by Miss E. P. Hughes and Mr. Trevor Owen, that all university secondary training must be post-graduate.

Lord Stanley of Alderley, who, in spite of the Welsh objection on principle to co-option in local matters, has been co-opted with acclamation in the National Welsh Educational Conference as one whose experience and knowledge, together with the close sympathy of practical humanism which the conference instantly recognised, made a most important communication of the statistics and the actual state of matters, especially in connection with the supply of primary teachers needed for the schools, by considering the problem of the training of teachers as it presents itself to the local authorities. The logic of figures gave pause to the conference, and showed the real magnitude of the task before the country. The optimism of the academic view was stayed, and the buoyant temperament of the county councillors came to a pause, as the point emerged that the real crux of the training problem is in Wales as it is in London and in England: how to improve the education of those who are required for the national purpose of teaching in elementary schools who cannot, for various reasons, ever reach the class-room of the training departments of the university colleges. Lord Stanley's suggestion is that facilities must be provided to secure that those who are not trained shall go through some preparation so as to pass the certificate examination in four or five years. To attract pupil

eachers to take up teaching, scholarships should e offered at 12 or 13 years of age, on condition f taking up teaching eventually, who will receive ducation up to 16 years of age in either county econdary schools, or elsewhere, and the period f pupil teachership must not be a two-years' ourse as half-time teachers and pupils. This lan would be impracticable except in large owns, and many speakers urged that in all cases t would be far better to take either half-a-year lternatively in continuation-school practice and in chool-training, or preferably one year continuous ttendance in a secondary school as pupil, and then ne year in school practice, before entering a niversity college; or, if unable to enter a university college, to establish further training colleges to meet the needs of students who for various reasons could only enter on a two-years' course. Prof. Burrows made the important suggestion that two-years'-course training colleges should be established with separate completely equipped staffs in the university centres, so as to bring such training colleges into close association and even affiliation with university colleges; and Principal Griffiths pointed out that such a course might be hoped eventually to lead to a raising of the standard of such colleges to future amalgamation of them with the university colleges, in which case the buildings would be utilised as hostels.

For the training of such teachers in primary schools as could not reach any training college, either university or other detailed schemes could not be expected to be suggested at the conference, for these details would be dependent on local conditions. One suggestion, however, will not be lost sight of—viz., that it would be extremely desirable to arrange university extension lectures for their benefit in different districts. For even if four or five years were taken in preparation for the certificate examination, and every one reached this examination and passed it, yet the method of preparation might too often be largely text-book methods of training, and that a single subject or two of extension lectures by a sympathetic lecturer would open up the meaning of real study of a subject and widen the idea of treatment of a subject both for learning and for teaching it.

Such a description of some of the practical topics considered gives only a slight insight into the significance of the conference. The illuminative suggestions of Mr. Tom John in connection with primary training, and those of Miss Hughes and Mr. Trevor Owen on secondary training, together with those of Principal Roberts and Lord Stanley, will need to be studied closely in the complete report of the conference, which we have reason to hope will be published.

The stimulating speeches of the Vice-Chancellor, of Mr. Lloyd George, M.P., of Mr. Humphreys-Owen, M.P., of Mr. William Jones, M.P., voiced the enthusiasm of Wales for education, and the determination that something should be done. The only resolution passed was one which declared it to be the duty of the Principality to undertake the training of teachers. Disappointment was expressed that the meeting would not then and there pass further resolutions as to what was generally felt by the conference. But one thing is clear. The conference has shown that Wales is ripe for the valuable suggestion of Principal Roberts — that a thorough expert consideration of the needs of Wales as an educational unit, together with a statement of the number and equipment of existing institutions, should now be made.

SECONDARY EDUCATION IN LIVERPOOL.

THE Education Committee of Liverpool has shown its sense of the importance of secondary education by entrusting to the skilled hands of Prof. M. E. Sadler the task of reporting on the secondary system of the city and the best means available for its improvement, with a number of other matters more or less interwoven with it. The interesting volume just published is the result; its usefulness would have been considerably increased by an index.

The principles which should underlie the secondary education of boys in a great commercial centre are clearly outlined. Amid the rush of business life it is necessary to keep in mind that "premature preparation for profit seeking" is not what is required; the final aim is in "teaching a boy to think sincerely and in making him try to bottom things." As in commerce the things to be bottomed are very largely human relations, it follows that humane culture is desirable rather than a markedly mathematical or scientific curriculum. Highly-trained intelligence is needed in the organisation of great modern businesses, in the prevision of new fields of commerce and new forms of industry, in the development of the old, and in the increasing complexities of government; and it can only come in trustworthy streams by a well-planned system of secondary schools worked under conditions which ensure their greatest efficiency, producing the maximum of judgment and personal initiative, combined with the strongest sense of public duty.

Unlike Bristol and Birmingham, Liverpool has no great endowments, the whole sum available amounting to only 10*s.* 7*d.* per thousand of population, as against £11 18*s.* in Manchester and Salford, and an average of about £36 in the other English towns containing provincial colleges and universities. The income of its three schools—Liverpool Institute, Liverpool College and St. Francis Xavier's College—is derived from fees, government grants and the like, and has fallen considerably below the estimated cost of a thoroughly satisfactory liberal education, £23 per head (p. 139). Hence salaries have been inadequate, with the concomitant results of excessive evening work, large classes, the sacrifice of a sound curriculum to the multifarious requirements of external examinations, and admission of the unfit under pressure of the

necessity for securing fees. A series of instructive diagrams exhibits the unsatisfactory duration of school life under these conditions.

The remedies suggested are to unify the two schools of the Institute, which has already been handed over to the City Council, and to adopt a curriculum extending from twelve years of age to sixteen; boys should be expected to stay through at least these four years, and business men are urged to give preference to candidates for appointments who show by a "leaving letter" that they have so attended, and in conduct and examination given satisfaction to the authorities of the school. The curriculum advised includes only one foreign language (French) up to the age of twelve, when Latin is introduced; English and mathematics take a prominent place, and space is found for science, history, geography, literature, drawing and manual training. The scale of salary proposed runs from £150 to £300, with possibility of a higher rate for special excellence and of a grace term every five years. With a fee of nine guineas and three hundred boys, of whom one-fifth are scholars paying no fees, the net annual cost of maintenance would be under £4,000. It is recommended that the Shaw Street College be handed over to the city and treated on similar lines, while the development of the Lodge Lane College into another Clifton is foreshadowed.

Other topics touched on are the need for new girls' schools in the suburbs and the strengthening of those already in existence, the supply and education of the two hundred and sixty pupil-teachers likely to be required annually for the elementary schools, improvement of the upper departments in the latter up to the age of fifteen and of continuation and technical evening classes, further training-college accommodation, the union of the Municipal School of Art with the School of Architecture and Applied Art, the work of the Schools of Commerce and of Domestic Science, and the establishment of a manual training-school for boys from thirteen to sixteen years of age. Finally, in an appendix, Mr. Cloudesley Brereton considers the question of modern languages, which he rightly insists are of vital importance to a port like Liverpool.

It is only by degrees that a plan so comprehensive can, if accepted in its fulness by the City Council, be put into force, but it has at least set up a lofty ideal which cannot but work for good. The steps by which it is gradually realised will be awaited with interest, not in Liverpool only, but wherever men have at heart the cause of secondary education.

British Songs for British Boys. Selected by S. H. Nicholson. 86 pp. (Macmillan.) *6d.*—This book contains one hundred national songs, which include Scottish, Irish, and Welsh ditties, as well as a preponderating element of English compositions in this particular vein. Therefore no element in purely British character is unrepresented; and, to make a catholic taste more catholic, America also contributes six songs to the collection. Sea songs, soldiers' songs, songs of country life, and Christmas carols, are likewise included; so the task of the editor has been undertaken in a very liberal spirit, and the whole may be described as being as admirable as it is cheap.

A HISTORY OF STIRLING HIGH SCHOOL.[1]

THIS is in many respects an admirable history. It is the fruit of long and painstaking research, and is written in a scholarly manner, with full references to authorities, printed and manuscript. It deals with education in a period of which little is known, and contains a great deal of valuable information. Its fault is that it covers too wide a field. No doubt every reader will wish that it dealt more fully with the matters in which he is specially interested, and we would wish that more space had been given to curriculum and methods of instruction, for which we could have spared many of the pages which describe the vicissitudes of organisation, changes of arrangement in the teaching and biographical details of the teachers. At the same time, we are free to admit that others may find these portions more interesting than the scholastic part. Nevertheless, the field is overwide for one book. We read here not only a history of the grammar school from its earliest days, including what there is known of pre-Reformation times, but the English school, the Writing and Mathematical school, the High school under the Town Council and under the School Board, the Song school, English and other schools subsidised or recognised by the Town Council, the Municipal School of Domestic Economy, Allen's Hospital school, the Classical and Mathematical Academy, the teaching of dancing and other accomplishments, and many biographical notices. The book is, in fact, a history of education in the town of Stirling.

We are impressed all through with the earnestness of this Scottish town in the matter of education. From an early date every child was compelled by law to attend school, and this rule applied to all classes. Of the school work in the first period nothing is known, but enough is known of the time of the Reformation to give Mr. Hutchinson material for a fairly full sketch of the Scottish grammar-school at that date. As usual, the masters were poorly paid, but their salaries were often augmented by allowances, often of an odd kind, such as the "bent silver" in lieu of rushes, and Candlemas offerings. Work began at 5 or 6 o'clock in the morning. The boys were all in one room, whose floor was strewn with rushes or sand. The hour between 9 and 10 was free for breakfast, 12 to 1 for dinner, after which all sat tight until 6 of the clock. The pupils were taught their own tongue, and also Latin and sometimes Greek grammar, the medium of instruction being Latin; boys who talked English to one another were whipt and they were spied upon when alone by "private clandestine captors" to see that they observed this rule. There were rules against dice and gambling, and all games likely to lead to gambling, such as

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[1] "History of the High School of Stirling, with Notices of Schools and Education in the Borough generally. Eight Centuries of Scottish Education." By A. F. Hutchinson, Rector of the High School, 1866-1896. With a Memoir of the Author by Rev. J. M. Robertson. xvi. + 307 pp. Illustrated. (Stirling: Eneas Mackay.) 21s.

wls, French kyles and glakis, nor might they rry weapons. Riots and lock-outs were not unmmon, especially if a customary holiday was reatened. The curriculum was very wide and cluded all the chief Latin authors, with convertion and composition. On Sundays they heard rmon and were cross-examined upon it for a large hour." Twice or thrice in the year the ys had a holiday to go and cut rushes, which rvice was later commuted for a money payment. he Candlemas ceremony, already alluded to, was aint. "The master sat in his desk with the hool roll before him, and slowly called over the ames. As each boy was called he advanced to ie desk and presented his offering. There was reat emulation as to who should present the rgest gift. When the sum amounted to as much a quarter's fee the master shouted *vivat*; if it nounted to twice the fee, he exclaimed *floreat bis;* r three times the fee, *floreat ter*; for a guinea or ore, *gloriat.*" The Latin was not faultless, it pears, in the Grammar School of Stirling. rove Tuesday was dedicated to cock fighting; ch boy who brought a cock paid a shilling, and e rest two shillings, the perquisite of the doctors. lis lasted well into the eighteenth century. A tailed description is given of the schoolbooks: *nat*, the *Dunbar Rudiments*, the grammar of *Petrus mus* and *Desparter*, *Buchanan's Prosody*, *Hume's ammar*, *Wedderbourne's Grammar*, *Pyloses* and *Vives*. It we must have done. There is more of this ld, and it has not only the interest of all quaint stoms but a real value for the student.

A HOLIDAY BOOK.[1]

JPON the basis of a simple scientific fact, Mr. Wells has again constructed a romance which will take a permanent place in literature, because of its incisive style and originality. wth is not continuous, but proceeds by paces pauses, and the fundamental idea which Wells elaborates relates to the discovery of a stance capable of enabling an organism to disse with the resting phases. The deliberate of this substance—Herakleophorbia—produces antic men and women; while rats, fowls, wasps, other creatures which obtain the food also grow Brobdingnagian proportions. Assuming that minds of the giant people are superior to those the rest of the human race around them, a ural consequence is a conflict between the giants their environment. Just as the thoughts and ks of a genius are regarded as eccentricities by world in general, so the giants found themselves vanted and subjected to petty persecutions from tively puny beings.

The noblest actors in the drama are a civil ineer and the man of science, Redwood, who discovered the food. In describing the nursery which these two designed for their children—the pioneers of the new race—Mr. Wells gives us a taste of his quality as an educational adviser; and we are constrained to think that, if the children of real life were surrounded in their plastic age with the things wisely provided for those of the romance, the mental capacity of our race would be increased.

In many other parts of the book the hand of the reformer is seen pointing scornfully at weaknesses of human nature and conventional ideas, and indicating attributes which ought to be cultivated. Above all this is the element of vivid reality, which commands the interest of the reader, in spite of the extravagant idea involved in the story. In this matter Mr. Wells may very appropriately be compared with Swift, for the high position he has obtained among our masters of literature is due not so much to the machinery invented by his imaginative brain as the verisimilitude with which he endows it. There are dozens of writers who produce readable novels by shuffling the affairs of life around a love centre, but in these columns we are not concerned with their works. It is because Mr. Wells stands alone in his ability to make us live in a world outside human experience that we admire his genius. For this power and his philosophic eye we are willing to forgive his gibes at schoolmasters in other books, and also the distorted statements he makes in the present one concerning the mental attitude of men of science in general and the method of heuristic teaching of chemistry in particular.

[1] "The Food of the Gods, and how it came to Earth." By H. G. s. vii. + 317 pp. (Macmillan.) 6s.

WATER-VAPOUR IN THE AIR.

A CHAPTER IN PHYSICAL GEOGRAPHY.[1]

A GENTLEMAN was sitting one hot damp evening during the rainy season in a room in Calcutta. On the table before him was a glass of iced brandy-and-water, and on lifting it he was surprised to find that not only was the glass itself wet on the outside but quite a little pool of water had formed around it upon the table. At first he thought the tumbler was cracked, but on collecting some of the moisture from its sides and putting it to his tongue he found it to be tasteless. "Very odd," he said, "the *water* comes through the glass, but the *brandy* doesn't." Of course he had merely demonstrated the existence of water-vapour in the atmosphere of the room in which he sat, and by a slight modification of his apparatus we may repeat his experiment.

Here is a tin box the sides of which have been painted black. By putting inside it a freezing mixture of pounded ice and salt its sides have become greatly chilled, and reduced to a temperature below the freezing point of water. The warm air of this room which has come into contact with the cold box has in its turn become chilled to a temperature much below its dew point, and being unable any longer to support the amount of vapour it contained, it has deposited the surplus upon the box, where we can see it frozen as a white rime or hoar-frost.

[1] Abridged from a Lecture on "Water-Vapour," delivered by Mr. R. H. Curtis, before the Royal Meteorological Society, and published in the Quarterly Journal of the Society, July, 1904.

The quantity of vapour present in the atmosphere varies very much in different regions of the globe, and in most places it also varies a great deal at different times, and occasionally within very brief periods.

Vapour is a most important factor in climate, a word which sums up the combined effect of many varied atmospheric conditions. There are parts of the globe where vapour is always present in great abundance, and in such places the air is constantly damp, and in a nearly saturated condition. The calm oceanic region near the equator, which marks the meeting-place of the north-east and south-east trade winds, is an example of such a humid climate.

On the other hand, there are regions where the quantity of vapour is always small, both relatively and absolutely. Inland regions far removed from any considerable source of supply, and subject to strong sun-heat, are generally in this condition: and the central portions of the Australian continent, parts of Arabia, and the desert regions of Africa, are examples of such parched and arid climates.

The amount of vapour in the air has a great deal to do with our personal comfort. A dry cold air is less unpleasant, and never feels so cold, as a cold damp air; and that even when the temperature of the damp air, as shown by the thermometer, may be actually higher than that of the drier air. But our sensations are often at variance with the thermometer, and more often than not they are so because of the way in which they are affected by the vapour in the air. In dry air a degree of temperature also can be enjoyed which with a humid atmosphere would be simply unendurable.

Vapour absorbs heat more readily than dry air does, and in the case of the cold damp air our bodies are robbed of their heat by the vapour at a time when heat can ill be spared; in the opposite case of a high temperature the dry air, thirsty for moisture, induces a rapid evaporation from our bodies, and by taking from them the heat required for the process, in the way we have already seen, this keeps them relatively cool. The damp air, on the other hand, already charged with moisture, checks evaporation, and if it be hot as well as damp the temperature of the body rises.

This probably explains why in certain hot but *dry* regions men can work out of doors without discomfort in temperatures much higher than would suffice to make sunstroke or heatstroke almost certain elsewhere where the climate is less hot but more humid. Sunstroke is far less frequent in the hotter but drier interior of the United States than it is on the eastern seaboard States where the air contains much more vapour; and even here in England there are occupations in which the workmen have to do hard work, such as in unpacking the ovens in which pottery has been baked, soon after the oven has been opened, in temperatures which they could not endure but for the fact that the air is not only hot but very dry also.

Every part of the globe yields its contribution to the vapour supply of the atmosphere—land surfaces, lakes, rivers, all contribute their quota; but by far the largest amount is drawn from the ocean, and especially from that part of the ocean upon which beats a hot tropical sun. Most of the rain which falls upon the land in summer is probably returned again to the air in the form of vapour, and it is obvious that the total amount of vapour contained in the atmosphere must be enormous.

Guesses have been made as to the relative proportions of dry air and vapour which together form our atmosphere, but they are guesses merely. To get some data upon which a more definite estimate can be based, evaporation gauges are employed, and from them we get useful information, although its value is somewhat limited because of the artificial conditions under which the gauges sometimes work, and also because it is not always safe to apply the data they yield for a particular district to a large area presenting a great variety of physical features. In the wettest parts of the British Isles much more rain falls than is evaporated, and probably in the driest parts rainfall and evaporation about balance each other in the summer half of the year, whilst most of the water required to supply the springs and underground waters comes from the unevaporated portion of the winter falls. In India it was found that the loss of water by evaporation from a large tank constructed to supply the city of Nagpur was two and a half times more than the amount actually used in the city, a fact which shows what a very practical bearing this aspect of our subject has in relation to some important problems of everyday life.

Water-vapour is, bulk for bulk, much lighter than air, and a cubic foot of it, at the temperature of 60° and the pressure of 30 inches of mercury, weighs only 5⅜ grains, whilst a cubic foot of dry air under similar conditions of temperature and pressure weighs 536 grains. Owing to this lighter specific gravity, vapour readily diffuses itself throughout the atmosphere when it passes into it; but its diffusion by gravitation alone would be a very slow and imperfect process, for if the air was always quite still the lower layers of the atmosphere would in some regions become saturated, and by remaining so would prevent further evaporation from taking place, whilst elsewhere the absence of vapour-laden winds would involve a perpetual drought. But the winds and the general circulation of the air are far more powerful agents than gravitation in transferring the vapour quickly from one part of the globe to another, and in effecting its fairly equal distribution over its entire surface.

It is now time for me to say a few words respecting some phenomena of the atmosphere in which water-vapour plays a leading part. We have already seen the vapour present in the atmosphere of this room made visible to us in the form of hoar frost upon the chilled sides of a metal box. But in nature precisely the same process occurs, and on a very grand scale. When winter holds everything in its chilly grip, and grass and trees and other objects out of doors become icily cold, they condense the vapour out of the light airs which at such times just breathe across them, and crystallise it into a mass of ice spiculæ which cling to every twig and frond, and outline even the delicate spider's web suspended between them. Indeed, nature is never more beautiful than when "Jack Frost" thus spreads his spotless veil around her, and clothes the bare branches of the trees with a feathery robe of sparkling crystals. On calm clear nights in summer, also, a similar agency is generally at work. Then the air which lies nearest to the ground becomes chilled by contact with the soil which has itself become cooled by radiating its heat into space, and again the vapour becomes deposited, not now, however, as frost, but as dew.

When this kind of chilling of the lower air continues for a considerable time, or when it occurs somewhat rapidly over a large area, the vapour may become condensed to a considerable height, the molecules of condensed water remaining suspended in the air and forming a cold damp fog. Such a fog may be only a few feet thick, or it may extend upwards for some hundreds of feet. I have seen one, covering a large level area, so shallow that the upper half of the body of a man walking through it was quite clear of the fog, although his legs were invisible from a distance of a few yards. Fogs often form in valleys, the cooled air gravitating down the sides of the hills surrounding the lower levels where the air is usually most damp, and, by chilling the vapour, filling the bottom of the valley with a cold, damp mist, whilst the tops of the surrounding hills may all the time be bathed in bright, warm sunshine.

A *fog* thus formed is essentially a *cloud*. The difference between a fog and a cloud may be defined very simply thus: "A fog is a cloud seen from within, whilst a cloud is a fog seen

from without." When, however, the cloud is formed at very low temperatures, instead of its being composed of particles of water, it consists of extremely minute spiculæ of ice, and although such clouds are usually formed at such great heights that direct observation of their composition is not possible, yet we know they must be so constituted, partly because of the low temperatures which exist in those regions, but also because of the effect such clouds produce upon the light which passes through them. When a cloud is composed of tiny round drops of water—"water-dust"—they reflect the light which falls upon them equally in every direction. But this the particles of which these lofty clouds are composed do not do, and the *halos*, or rings of light, which are formed when the light of the sun or of the moon passes through them, is just what we should expect to see if the light was reflected and refracted by minute crystals of ice. These halos are sometimes finely coloured and very brilliant.

Now, how is the chilling of the air which is necessary to condense the vapour and produce a cloud brought about? Well, it may be caused in any one of two or three ways. When a current of relatively warm air comes into contact with cold surfaces of land, such as a mountain range, a cloud is often formed by the cooling of the air which results from the contact. The mixing of two bodies of air of different temperatures may produce a similar effect; and very probably some of the thin layers of cloud, so often seen presenting a twisted and torn appearance, are formed where the faces of two superposed currents of air come into contact with each other and become to some extent intermingled.

But by far the most common cause of the formation of cloud is the mechanical cooling of vapour due to ascending currents in the atmosphere. This occurs owing to the expansion of the air from the reduction of the pressure upon it, and I need now only point out that such ascensional currents may be caused in two or three ways. The warming of the air in the day-time by the heat radiated into it from the heated ground is one great cause of their formation. The absorption of the sun's direct heat by the vapour itsel is another; and in this connection it is important to remember that vapour absorbs such heat far more readily than dry air does, and that whilst dry air is almost perfectly diathermanous—or transparent to heat—water-vapour is not. A third cause is the forcing upwards of an advancing stream of air when it encounters a sufficiently large obstacle to its onward progress, such as a range of high hills or mountains.

I daresay many of you have watched on a fairly warm day in summer the process of cloud-making due to ascending air. At first one may see some small, detached, curly clouds, which, if watched, will be seen to grow in size as the day proceeds and the temperature increases. If the ground happens to be rather damp, affording a good supply of vapour, their growth will proceed the more quickly, and by mid-day, or in the afternoon, the small clouds of the morning will be found to have grown to great size, and very probably will be seen towering aloft in huge billowy masses of white, brilliantly illuminated by the reflected light of the sun; whilst very often a beautiful effect may be seen when from between two such masses of condensed vapour the sunshine lights up the dusty air below with long shafts of brilliant light. Later on the sun's rays become less ardent, the ground cools, and the upward stream of air becomes checked, and then ceases; the clouds now sink to a lower level, and becoming subject to an increased pressure, they become warmed at the same time, and once again they dissolve into invisible vapour and disappear, leaving the evening sky cloudless once more.

The various forms and types of clouds have each their special characteristics and distinguishing names. Much use may be made of them as weather signs, not alone by judging from their forms, but also by considering the directions and rate of their movement, and by observing the changes which may be taking place in them. Meteorologists divide clouds into three principal groups, based principally upon their elevation above the earth; the highest are the *Cirrus*, which float at great altitudes either as the thin sheet of ice spiculæ which produces the halos I have mentioned, or as those delicate wisps and cloud

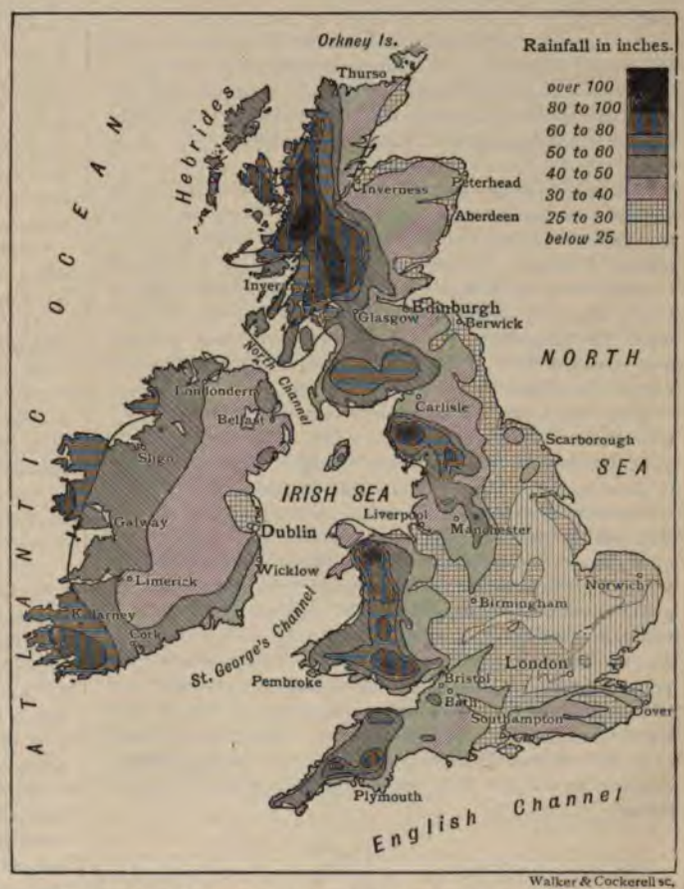

FIG. 1.—Map of British Rainfall prepared by Dr. H. R. Mill director of the British Rainfall Organisation.
[From Huxley's "Physiography" (Revised Edition)].

lets which frequently give so much beauty to our summer skies. Then at a lower level come the large billowy clouds of which I have spoken, which are known as *Cumulus;* and yet lower down are the vast unbroken sheets of cloud to which the name of *Stratus* has been given. There are many compounds of these chief genera, but of these I need not stop to speak.

It is not always, however, that clouds disperse themselves in the way I have described. When the condensation of vapour reaches a certain stage, the cloud particles become so large that they sink earthwards, meeting and coalescing with others on their way, and gradually increasing in size, till they leave the cloud and fall as drops of rain.

Time will not allow me to deal at any length with this effect of the condensation of vapour; to do so would require an evening to itself. But I wish to show a map of the British Isles (see Fig. 1), on which is indicated the relative rainfall of different parts of the country: and I do so in order to point out the effect which is produced by the thrusting upwards of masses of warm and moist air arriving on our coasts after traversing the ocean.

You will notice that the regions of greatest rainfall are the hilly districts which these vapour-laden currents of air first meet, such as the western parts of Ireland, the hilly districts of Wales, and of Westmoreland and Cumberland, and the western Highlands of Scotland; and in each case the cause of the large precipitation is the forcing up of the air to a higher level, and the consequent chilling of the vapour it contains.

The Stye Head in Cumberland has the distinction of having the largest rainfall in our islands, the average fal being 170 inches per annum; but Seathwaite, also in Cumberland, comes very near it with an average fall in the year of 137 inches, and with occasional falls of as much as six inches in a single day.

India can, however, boast of having the wettest spot in the world, so far as is known, for at Cherrapunji, on the slope of the Khasia Hills, the annual fall, most of which falls in the five months of summer, averages nearly 500 inches, and sometimes amounts to as much as 600 inches. This enormous condensation is due to a similar cause to that which operates at Seathwaite—the thrusting upwards of the air—in this case the south-west monsoon, which arrives from the Bay of Bengal laden with vapour drawn from the heated ocean surface.

There are very many more phenomena of the atmosphere in which water-vapour plays a part—and oftentimes a very important part—to which I cannot now allude. But I have tried to show how a particle of water may be taken from the ocean and stored away invisible in the atmosphere above it. How that particle may travel for many miles to distant parts of the globe, and then by the action of another of nature's processes be changed back again into water, and fall once more upon the ground beneath. There it may fulfil its mission by assisting to maintain some form of life; or it may unite itself to other and similar drops till together they form a tiny stream, and this process of accretion continuing, the stream may gradually grow to the dimensions of a river, which may bear our drop of water outwards till once again it finds itself a constituent part of the ocean from whence it came, possibly to repeat its pilgrimage in carrying out the part it is destined to play in the economy of Nature.

Judith. Edited by Prof. Albert S. Cook. xxiv. + 72 pp. (Heath.) 1*s*. 6*d*.—This is the first volume of a new American literary venture to be known as the *Belles Lettres* series. A word must be given to the outward presentment, which justifies very high expectation; for, as befits a series which already promises to run to one hundred and fifty volumes of purely classical literature, the printing, designs, and covers are handsome, and indeed unique. This is a point not always thought of by publishers on this side of the water, whose educational editions are often dully presented. This series ought to enlighten them as to undeveloped possibilities in this direction. This old and little known Anglo-Saxon piece is here treated with elaborate scholarship. The introduction is full and yet clearly condensed, and the notes, bibliography, and glossary are admirable. That section of the introduction which deals with the poet's art may be specially recommended.

THE TEACHING OF ELEMENTARY MATHEMATICS.[1]

ASSUMING that the logic of Euclid is unassailable (see Prof. Forsyth's remarks at the Glasgow meeting of the British Association, 1901), and that it is properly taught, it may be granted that it is excellent training in logical argument; and teachers working with reform ideas must show that there is no loss in logical training under the new system. A certain clever man is reported once to have said, "I know no French, I have not even taught it." The "chapter ahead" system may succeed in the hands of a few exceptionally good men *in some subjects*, but not in elementary mathematics. It is the teacher's duty, if he has decided on a text-book, to know that book from cover to cover before he takes a single page with a class. He or she must get hold of the spirit of the book, and not only know what is in it, and where to find it, but *what is not in it, and in the opinion of the teacher ought to be*. The teacher should never be afraid of trying experiments in new ways of presenting old matter, or in fresh matter to be presented; but a record of all such experiments should be kept, so that those that do not produce results corresponding to the time and trouble spent may be eliminated, and those that are good repeated, with the confidence that success gives, to other students.

Comenius, in his "Great Didactic," of which a Latin translation appeared in 1657, took Nature's work as his model and laid down, amongst others, the following general principles:—

(1) "Nature prepares the material before she begins to give it form."

(2) "Nature makes no leaps but proceeds step by step."

(3) "Nature prepares the material, so that it actually strives to attain the form."

(4) "Nature advances from what is easy to what is more difficult."

(5) "Nothing is produced by Nature of which the practical advantage is not soon evident."

(6) "Nature develops everything from the roots."

(7) "Nature knits everything in continuous combination."

These principles may be taken to be the dominating ideas of the reform in the teaching of elementary mathematics.

Taking the subjects in their natural order, we will first consider:—

ARITHMETIC.—"Place-value," called by any name you please, should be thoroughly drummed in at the very commencement in a practical manner. Squared-paper, ruled in inches and tenths, forms the most natural illustration—columns for units, rows for tens, and squares for hundreds. This also gives the pupil an idea of number. Many a boy can say glibly "seven times eight is fifty-six," &c., but has no idea of how much the number represents. A good oral lesson is what is called the composition of numbers. Thus, 23 can be made up as follows: 2×10 and 3, 3×7 and 2, 4×5 and 3, &c. Squared-paper can also be used for this, the idea of the area of rectangles unobtrusively forcing itself on the child's attention. When some progress has been made, addition and subtraction (Italian method) follow naturally. During this stage in particular, in fact throughout all elementary teaching, the teacher should be a living note of interrogation with a perpetual plaint of "Why? Why? Why?"

The idea of place-value being by this time fairly well established in the minds of the great majority of the class, multiplication should be proceeded with. The pupil should be taught to multiply by the *digits*, *working from left to right*. This is further drill in place-value, and naturally leads later on to decimal

[1] Abstract from a lecture delivered to the Pedagogic Circle of the Cardiff and District Educational Society, November 25th, 1904, by J. M. Child, B.A.

approximation, nothing having to be unlearnt. Division should also be taught on the same lines as in subtraction, and, as soon as facility is attained, the shortened form, omitting the subtrahend, should be used. Compound rules may follow, and serve as drill in place-value.

The pupils should next take decimals, working solely from the idea of place-value, and approximation methods for multiplication; division and decimalisation of money should follow, but there should be no attempt at such mathematical embroidery as

Find the value of

$$\frac{\cdot 03 + 6\cdot 142857}{2\cdot 01 \text{ of } 6\cdot 723} \div \left[1\cdot 75 - \frac{\frac{1}{8} \text{ of } \cdot 07}{\cdot 0003} \right] \text{ of 15s. 6d.}$$

with answers working out to such things as £234 13s. $10\frac{117}{210}$d. They are neither elegant nor useful.

The composition of numbers will have prepared pupils for Factors, which should be very thoroughly taught. L.C.M. and G.C.M. should be most certainly done by the *use of factors*. Elementary vulgar fractions may then be introduced. Here the teacher can provide a wealth of apt illustration. The reason for the Rules of Fractions must be explained by concrete examples. For instance, the reasons for each step in the working of the following:—

$$(1)\ \frac{1}{15} + \frac{1}{10} = \frac{2}{30} + \frac{3}{30} = \frac{5}{30} = \frac{1}{6}$$

$$(2)\ \frac{3}{4} \times \frac{5}{6} \div \frac{25}{32} = \frac{\cancel{3}}{\cancel{4}_1} \times \frac{\cancel{5}}{\cancel{6}_2} \times \frac{\cancel{32}^{4}}{\cancel{25}_5} = \frac{4}{5}$$

might be represented on the blackboard by parts of circles. The extended meaning of a multiplier should now be given. The teacher must not be content to pass on until the rules are understood, not learnt by heart.

The rest of arithmetic is Proportion and common-sense, on the part of both teacher and pupil. The Unitary method should be used, reduced—after a few lessons—to two lines, one containing the hypothesis and the other the conclusion, with corresponding concrete quantities written underneath one another, and, when possible, that in which the answer is expressed coming last. There should be no such division of the subject into rules under the headings: Practice, Interest, Discount, Stocks, &c. These should be only considered as particular examples of the one fundamental principle of Proportion. In fact, *all* arithmetic is *Place-value*, *Proportion*, and *Common-sense*, and the greatest of these three is common-sense.

As soon as Proportion is started, the pupil should be led on to algebra.

ALGEBRA.—The transition from arithmetic should be unnoticeable. Symbols should be introduced on some such plea as the want of more figures than the usual ten of arithmetic, and, the meanings of ab, a^2, a^3, a^n, having been explained, the pupil should be familiarised with their use by *oral* substitutions, thus:—

Ex. 1.—What are the values of

(1) 2^2, 2^3, 3^4, 4^3; (2) a^2, 2^b, a^b, if $a = 3$, $b = 4$;

(3) $2^2 \times 2^3$, 2^5; (4) $a^b + a$, $a^b + c$, if $a = 2$, $b = 3$, $c = 4$.

Ex. 2.—Express the product $a^2 \times a^2$ (i.) at full length, and (ii.) as a power of a.

From this kind of thing the pupil can be led to generalise for himself the laws $a^m \times a^n = a^{m+n}$ and $(a^m)^n = a^{mn}$ for positive integers. Written examples in evaluation should follow, but not the fearsome things in many text-books. The results of the work done in arithmetic should be drawn up as formulae, *e.g.*, Interest, cost of papering walls, &c.; formulæ in Chemistry, Physics, and Engineering should be freely borrowed, in fact, anything which has a real signification. Tabulation of such formulæ as "$s = \frac{1}{2} gt^2$, where g stands for 32," for different values of t should follow. If the Index Laws and symbolic notation are thoroughly understood, and facility in substitutions in elementary formulæ attained in twelve months, the teacher has every reason to be pleased with himself, especially if the one thing that the pupil has failed to grasp is the fact *that he is doing algebra.*

From this point I think "playing about with ruler and compass" should form part of the work in mathematics, without assigning any special hour for it, and, as in algebra, without any text-book, if the teacher does not mind a little extra work.

Drawing dotted lines with the ruler will give the locus idea of a straight line, and the same with the compass will bring out the law of equidistance of any point on the circumference from the centre. The experimental facts that two straight lines meet in one point, and that two circles may meet in two, may serve to introduce methods of hiding buried treasure, picking up buoys at sea, piloting, &c., and finally lead up to co-ordinates. A good illustration is the method of finding a town on a map, being given the latitude and longitude. This at once brings out the necessity for distinguishing between north and south latitudes, east and west longitudes. Many other illustrations will occur to the teacher, from any of which the idea of negative length follows as a matter of course. Graphs should now be taught, (1) for plotting tabulated formulæ; (2) for plotting results of statistics or experiments; (3) plotting values satisfying given equations; (4) recognition of such graphs as those corresponding to $y = ax + b$, $y = ax^2 + bx + c$, $xy = c$, $x^2 + y^2 = a^2$, &c. Meanwhile the pupil is acquiring a knowledge of the *things he is to think about afterwards* in geometry, not by learning definitions of them, but from little pictures he has drawn himself with ruler and compass. The plotting of the locus of points equidistant from two given points, and the proof *by folding* that it is the right bisector of the line joining the given points, should lead to constructions for bisecting a line and drawing perpendiculars to it. But, so far, it should be all "play" in geometry.

From now on, a separate hour may with advantage be allotted to *practical* geometry. The work for the next twelve months will be easy problems, resulting in simple and simple simultaneous equations; but all equations should proceed from problems. A chapter on "solution of equations" is sheer waste of time. Graphs of the equations should be drawn to verify the roots obtained, and we may follow with graphs of $y = 2^x$, 3^x, 4^x . . . 10^x, from which the idea of a need for fractional and negative indices will readily be grasped. Defining square and cube roots of numbers as quantities whose squares and cubes are the original numbers, and working such examples as

Ex. 1.—Find the values of:—

(1) $(\sqrt[3]{2})^3$, $(\sqrt[3]{5})^1$, $(\sqrt[3]{x})^6$, from the definition,

(2) $(2^{\frac{1}{3}})^3$, $(5^{\frac{1}{4}})^4$, $(x^{\frac{1}{5}})^5$,

assuming that the fractional powers obey the laws of indices; it should be easy to get the pupil to generalise for himself that $\sqrt[n]{x}$ may be represented by $x^{\frac{1}{n}}$, if it is supposed that $\frac{1}{n}$ behaves as an index, *and obeys the ordinary laws of indices, already obtained by the pupil himself for positive integers.* Similarly the pupil should learn that powers with negative indices are convenient symbols for representing reciprocals. The step to logarithms, by plotting 10^x, is easy and natural. This is easily done by obtaining, by successive square-root extraction, $10^{\frac{1}{2}}$, $10^{\frac{1}{4}}$, $10^{\frac{1}{8}}$, $10^{\frac{1}{16}}$, and from these, by multiplication, $10^{\frac{3}{4}}$, $10^{\frac{5}{8}}$, $10^{\frac{9}{16}}$, $10^{\frac{3}{8}}$, $10^{\frac{5}{16}}$, &c. Taught in this way the pupil *understands* all that is necessary about the laws of logarithms, namely, the connection between them and indices. Expressions of numbers in a "standard" form, such as $3\cdot 925 \times 10^{-3}$ for 0·003925, $3\cdot 925 \times 10^2$ for 395·3, not only gives a good idea of the value of the last of a number of significant digits

but also reduces the laws for finding the characteristic of a logarithm of a number to a single rule, viz.: "The characteristic of a logarithm is the index of the power of 10 used to bring the number to "standard form." Methods of interpolation should be experimentally determined from the graph.

Proceeding to Multiplication and Division, the teacher will probably find his first real difficulty when he tries to make his pupils understand the meaning of a negative multiplier. The only consistent method is, I think, analogous to that used in indices. It should be shown on squared paper that $(a-b)(c-d) = ac-ad-bc+bd$, so long as $a > b$ and $c > d$; *assume this formula to be true for all values of* a, b, c, d, then

(1) If $a = 0$, $d = 0$, we have $(-b)(c) = -bc$,
(2) If $b = 0$, $c = 0$, ,, $(a)(-d) = -ad$,
(3) If $a = 0$, $c = 0$, ,, $(-b)(-d) = bd$,

and the rule of signs becomes an understandable thing to the pupil. Such results as $(x-a)^2$, $(x+a)^2$, $(x+a)(x-a)$ should be *memorised in words*. Long multiplication and division may be left till later, when it will probably require no teaching. It is best to go straight on to factors, taking them in the following order:—

(1) Monomial factors, L.C.M., G.C.M.
(2) The type $(a+b)(c+d)$, $(x+a)(x+b)$,
(3) ,, $(x-a)(x+a)$,
(4) ,, x^2+ax+b,
(5) ,, ax^2+bx+c.

Type (4) should be always reduced to the difference of two squares and so factorised, and on no account should the guessing method be allowed, to start with at any rate. As soon as the pupil (from, say, seeing the teacher multiply out a couple of binomial factors on the board, the product of which he is asked to throw into the form of the difference of two squares and hence factorise) begins to suspect that there is a quicker method by retracing the steps of the multiplication, he may use it. When facility is attained, the corresponding method for type (5) should be used, and not the usual criss-cross style. Many people will say that this is great waste of time. To these I reply that factors prove easier and surer this way, and also the method of solution of quadratic equations follows at once. Graphs of $y = ax^2+bx+c$, and of the intersections of

$$(1)\ \left.\begin{matrix} y = ax^2+bx+c \\ y = mx+c \end{matrix}\right\} \qquad (2)\ \left.\begin{matrix} y = ax^2+bx+c \\ y = a'x^2+b'x+c' \end{matrix}\right\}$$

which serve to explain the number of roots obtained for quadratics and simultaneous quadratics. Graphs of the intersection of

$$\begin{aligned} ax^2+2hxy+by &= c \\ a'x^2+2h'xy+b'y &= c', \end{aligned}$$

together with $y = mx$, will explain the reason for the substitution of $y = mx$ in treating simultaneous homogeneous equations, if this method is used. Personally, I find it is easier for pupils simply to eliminate the constant from the equations as they stand and factorise the result, and substitute in one of the given equations the values obtained for y in terms of x. From this point algebra may be left to take the usual course, starting with fractions.

GEOMETRY.—Starting with elementary constructions, the why and wherefore being reasoned out, and accurate figures being insisted upon, the chief properties of the straight line and the circle should be found experimentally. Great attention should be paid to the principle of symmetry, and the fundamental principles of superposition and folding—only a special case of superposition—should be used in preference to any other to provide proofs. Parallels should be taught from the set-squares, their chief property being recognised to be the making of equal angles with any transversal. Areas should be taught arithmetically on squared-paper, and the areal properties of triangles and parallelograms should be generalised from repeated numerical experiments, and these generalisations verified by *dissection*. The "reason why" should be insisted on from the very commencement, no matter how scrappy, practical, or even illogical it is at first, and the pupil should by degrees be induced to reduce these "proofs" to strictly logical form. Then, *and not till then*, he should be introduced to a course of theoretical geometry.

SOLID GEOMETRY.—The elementary properties of the simpler solid figures and their mensuration ought to form part of the first principles of the geometrical work, being brought in as opportunity offers. There is no reason why this should be neglected; in fact, there is every reason why it should not be. Man has to live in three dimensions, and not in two. The study of solid geometry, by stimulating the imagination, produces a very great educative effect, which is totally lost when this part of the subject is omitted from the early work. Models should be made by the pupil in cardboard and experimented with, and volume formulae verified from wood or glass models by weighing, starting with the inch cube as a unit.

TRIGONOMETRY.—The constructions for the sub-division of straight lines should serve to bring out the properties of equiangular triangles (the ratio of the aras being deduced by experiment), and leads up to the definition of the trigonometrical ratios. Graphs of these should be drawn between 0° and 90°, *by projection from a rotating vector*, serving, by the way, as accurate drill in drawing sets of parallels and use of the protractor or scale of chords. Formulae should be made out for areas of figures and for solution of triangles. The idea of angles of any magnitude, and the changes that must be made in the definitions for the trigonometrical ratios of angles greater than 90°, and the idea of the method of interpolation, already touched upon when learning the laws of logarithms, should be practically treated.

GRAPHS.—Rates of increase on a graph should be associated with the tangent of the angle of slope; and since the rate of increase for a straight line is constant, the pupil will have no difficulty in completely understanding, or even in making out for himself, the methods of interpolation.

The scheme I have outlined would, I suggest, give excellent training in the first principles of elementary mathematics; but more than this, it would teach the pupil to find out things for himself, *i.e.*, how to learn and how to apply knowledge already acquired to gain further knowledge, or to practical purposes; whilst the desire for knowledge for its own sake is more likely to be fostered by a method such as this than by the old system in which "interest" played a very subordinate part. The boy would become not a calculating machine, but a reasoning man.

Shakespeare's Chart of Life. By Dr. William Miller. 108 pp. (Madras: Wat Esan.) 4 rupees.—The volume which is heralded by this somewhat ambitious title is really a collection of Dr. Miller's studies of "King Lear," "Macbeth," "Hamlet," and "Othello," grouped, and published in one volume instead of four. Three of these have already been reviewed in these columns. The monograph on "Hamlet" we are privileged to read for the first time. Those who know the lurid sub-titles in which Dr. Miller revels may perhaps unjustly pass by these studies. They are deserving of much attention, for the author disclaims all idea of posing as an annotator or a critic. He lays hold of the ethical side of Shakespeare's teaching, laying constant stress on the fact that a moral idea underlies all Shakespeare's greater dramas. This, of course, is no novel idea; yet, even by the side of Prof. Moulton's recent book, this Indian contribution to Shakespeare study is worth attention, and the four monographs are here presented in a commendably handy form. If any of our readers is a subscriber to *The Indian Review* he will get the volume one rupee cheaper.

THE PREVIOUS EXAMINATION AT THE UNIVERSITY OF CAMBRIDGE.[1]

THE Syndicate appointed on November 26th, 1903, to consider what changes, if any, are desirable in the studies, teaching and examinations of the University of Cambridge, have presented their first report to the Senate.

The Syndicate resolved to confine their first report to regulations for the Previous Examination. The passing of this examination ought to be a guarantee that a student has attained a sound elementary knowledge of the subjects which should form part of a liberal education, and which provide the mental training necessary before any course of special study is undertaken. If it is impracticable at present to impose an examination in all such subjects, owing either to deficiencies in the teaching given in our schools or to any other cause, it may at least be possible to insist on a knowledge of those which seem to be indispensable, and to include others as optional and alternative. The fact that these last subjects are optional will make it easier to establish and maintain a reasonably high standard of attainment in them.

In approaching this branch of their enquiry, the Syndicate thought it important to ascertain the views and to profit by the experience of schoolmasters. For this purpose they invited representatives of the Headmasters' Conference, of the Incorporated Association of Headmasters, and of the Incorporated Association of Assistant-masters, to hold interviews with them at Cambridge. In addition to this, the Syndicate have had before them certain resolutions passed by these bodies. On three points there was practical unanimity: (1) that the use of set books for examinations in languages should be discontinued; (2) that there should be no increase in the number of subjects required; (3) that the examination in English should be made more thorough.

The Syndicate have also had before them a communication from the Royal Society urging the Universities to take steps with the object of encouraging the study of science in schools.

The Syndicate propose that the Previous Examination should be divided into three parts, all of which must be taken, not necessarily at the same time, by all candidates for a degree, except in so far as they have obtained exemption from one or more of the parts.

It is proposed that Part I. should consist of languages, ancient and modern. In this part candidates must take two languages, one at least of which must be an ancient classical language, so that it will be possible for them to take Latin and Greek, both of which have been compulsory since the establishment of the Previous Examination in 1822. The question whether the University should continue to exact a knowledge of both the ancient classical languages in the Previous Examination has naturally occupied a large part of the Syndicate's time and attention. A demand for the proposal to make Greek an optional subject comes from teachers, parents, professional men, and men of science; and a large majority of headmasters and assistant-masters desire to make Greek optional in the case, at any rate, of some candidates. The majority of the assistant-masters would extend the exemption to all candidates; the majority of the headmasters would not extend it to candidates for an ordinary degree, and some of them would limit it to candidates for Honours in mathematics or natural science. The Syndicate see no sufficient reason for treating this last class of students as if they were wholly exceptional. In the case of other boys, educated on the modern side of a school, or at a school where there is little or no opportunity of learning Greek, there is evidence to show that the present requirement is burdensome and sometimes even prohibitory, and that the modicum of Greek which such boys acquire by an effort of memory is of little educational worth. The Syndicate believe that the serious study of the ancient classical languages is invaluable, and provides a mental training which can hardly be secured in any other way. But it seems to them that this object can be attained by the study of either Latin or Greek, more especially if the standard of proficiency in each language is somewhat raised.

The Syndicate consider that, if an alternative is allowed for one of the ancient languages, it should be of a literary or linguistic character. The Syndicate propose for this purpose to include in Part I. of the Previous Examination French and German, which at present are additional subjects for candidates for Honours, and at the same time so to fix the standard required in these languages that the papers in either of them may be as difficult as those in Latin and Greek. French and German composition will be required, in addition to the translation of unprepared passages; and there will thus be no temptation to choose the examination in a modern language as being the easier course. For the benefit, however, of students to whom the power to read French and German is of greater importance than a more special knowledge of one language only, candidates will be allowed to take the translation papers in both languages instead of both the papers in one language.

It is proposed that Part II. should consist of the mathematical subjects now required; but that the paper on Paley's "Evidences" should be discontinued. This work is not now accepted as a satisfactory statement of Christian Apologetics, and it is believed that a large proportion of those who pass in the subject have read nothing more than a bare abstract, which is committed to memory.

It is proposed that Part III. should consist of one compulsory subject and several alternatives. The compulsory subject is English composition, and it is intended to introduce into this paper, which has hitherto consisted of an essay only, some further test of the power of writing good English. Of the remaining four papers every candidate must choose two. Of these papers one is at present in Scripture knowledge, but, as a knowledge of the Greek text will no longer be required, it seems reasonable to increase the amount of the subject-matter. The other papers are new. One of these is in English history, the other two represent branches of natural science. The Syndicate were urged by weighty authorities to require from all candidates some knowledge of natural science. But, after full consideration, they are unable to recommend more than its inclusion among the alternative subjects.

If the scheme now submitted should meet with the approval of the Senate, it will be the duty of the Syndicate to propose such supplementary regulations as may be necessary for bringing it into operation. The Syndicate recommend:

I. That the regulations for the examination in the additional subjects of the Previous Examination be rescinded.

II. That regulations 6 to 11 for the Previous Examination be rescinded, and that the following regulations be substituted for them:

(6) That the Previous Examination be divided into three parts, each part to be taken by all candidates for a degree, except in so far as they have obtained exemption from one or more of the parts.

(7) That Part I. consist of the following eight papers, namely:

(*a*) A paper containing easy unprepared passages of Latin for translation into English, the use of a dictionary being allowed.

(*b*) A paper containing questions on Latin accidence and syntax, together with one or more easy passages of English for translation into Latin.

(*c*) A paper containing easy unprepared passages of Greek

[1] From the *Cambridge University Reporter* for November 11th, 1904.

for translation into English, the use of a dictionary being allowed.

(*d*) A paper containing questions on Greek accidence and syntax, together with short English sentences for translation into Greek.

(*e*) A paper containing easy unprepared passages from standard French authors, not earlier than the year 1600, for translation into English.

(*f*) A paper containing a passage of English for translation into French, and a subject for original composition in the French language, candidates being allowed a choice between the two.

(*g*) A paper containing easy unprepared passages from standard German authors, not earlier than the year 1750, for translation into English.

(*h*) A paper containing a passage of English for translation into German, and a subject for original composition in the German language, candidates being allowed a choice between the two.

(8) That in Part I. candidates be required to take both papers in each of two languages, one of the two languages being either Latin or Greek, provided that papers (*e*) and (*g*) may be taken instead of the two papers in either French or German.

(9) That Part II. consist of three papers, one in arithmetic, one in algebra, and one in geometry; and that candidates be required to take all three papers.

(10) That Part III. consist of the following five papers, namely:

(*a*) A paper containing exercises in English composition, including subjects for an English essay, some of the subjects for the essay to be taken from a selected standard English work or works.

(*b*) A paper on one of the synoptic Gospels, together with the Acts of the Apostles in English.

(*c*) A paper containing questions on the outlines of English history divided into periods as prescribed from time to time; candidates to take questions on any one of the periods.

(*d*) A paper on experimental mechanics and other parts of elementary physics.

(*e*) A paper on elementary inorganic chemistry.

The books, periods, and schedules for the papers in Part III. to be prescribed from time to time by the Board of Examinations.

(11) That in Part III. candidates be required to take paper (*a*) and two of the other papers.

III. That the substitution of the new regulations for those at present in force do not come into effect until the Senate shall have approved such further alterations in the Ordinances as are rendered necessary.

Illustrated and Descriptive Catalogue of Physical Apparatus, &c. 628 pp. Manufactured by F. E. Becker & Co. (W. and J. George, Ltd., successors).—The science-master in every grade of school should possess a copy of the new catalogue of Messrs. George, for he will find here particulars as to the available apparatus in sound, light, heat, magnetism, electricity, mechanics, and other branches of physics, with information as to price and other necessary details. There is a profusion of well-drawn illustrations, which, together with the clearly expressed descriptions, will serve to explain to any buyer exactly what he is purchasing. This excellent catalogue will form a valuable addition to the reference library of any physical laboratory.

SECONDARY EDUCATION IN NATAL.

SECONDARY education in Natal has made great advances during the last two years. The improvements, to some of which attention will be directed here, are in a large measure due to Mr. P. A. Barnett, whose return to our own Board of Education, after having acted as Superintendent of Education in Natal for two years, we chronicled last month. Mr. Barnett was originally seconded from the Board of Education for six months, *with* the view of suggesting improvements in the educational system of Natal, and introducing such reforms as would bring it into line with the best modern practice. Six months was found to be too short a time to do all that Mr. Barnett deemed necessary or to give the reforms he instituted a fair start, and his stay was prolonged for two years. The recent report on the secondary schools of Natal, containing a general report by Mr. Barnett, is consequently of exceptionul interest, and the following information, abridged from it and from the remarks of the inspectors, will serve to give teachers in this country a good idea of the state of secondary education in the colony.

Machinery has been set up for the purpose of inspecting all secondary schools in Natal, whether in receipt of public grants or not, which may desire an independent guarantee of efficiency, by means of a careful expert scrutiny of work in progress. There are unmistakable signs that most of the important schools in the colony will voluntarily ask for this public testimony to their usefulness, although only one asked for inspection in the school year 1903-1904. The managers of a new school that desires inspection give notice to the Education Department as soon as possible after the beginning of the school year, and the department arranges with the school staff for convenient dates. Inspectors visit the schools and make their reports to the Superintendent of Education, when a copy of the whole report is sent to the school, to be published at the discretion of the managers, but *in extenso* or not at all. A report on the financial state of the school is not made unless specially requested. Inspection may be asked for in any year, but need not be made every year; nor do managers commit themselves to anything beyond the one inspection for which they ask. At present no fees are required. It is intended to define an "inspected" school as one which is inspected by the Education Department not less than once every three years. In the case of schools receiving public money, inspection is made every year.

Although the deadening effect of delusive "university" examinations has been greatly modified in consequence of the criticisms in Mr. Barnett's report of last year, the system dies hard, and will continue to vitiate much of the education of the colony until parents make a determined stand against it. No Government schools in Natal are now permitted to organise classes for the Cape University "School Higher" examinations, and no pupils in such schools may be presented for any external examinations whatever, except on the written request of their parents or guardians. The Cape University matriculation examination, though very much less useful to the schools and the children than it might be made, is the first examination for which pupils in Government schools may be prepared; and, as it is confined necessarily to the older pupils, for the main body of the children the schools can devise rational and appropriate curricula on liberal lines.

The particulars in which progress can be made by the removal of this stone of offence, says the report, lie in every part of the school curriculum, but most notably in English, modern languages, and school science. In English the teachers have ampler liberty to take their pupils over a larger ground, and to

[1] ["Colony of Natal. Education Department. Reports on Government and State-Aided Secondary Schools." 1903-1904. Pietermaritzburg: *Times* Printing and Publishing Company, Limited.]

devise means to give them a knowledge of books and a taste for them, instead of fixing their associations with literature solely on the analysis of language and the mastery of a large number of disparate facts about a fragment of a classic. In modern languages, speech can be taught as speech, and teaching can be expressly used to create some lively sympathy with foreign points of view. School science, for which practically no provision is made in the lower kinds of "university" examinations for children, can be used to sharpen their wits, and to make them acquaint themselves with the most interesting and important natural phenomena.

There is no reason, says Mr. Barnett, why schools should go far afield, either seven thousand or one thousand miles away, for even a trustworthy certification. The secondary schools of high rank in Natal are quite strong enough to combine to establish an Examining Board of their own, which could easily, and would properly, take account of regular domestic examinations, and grant a school leaving certificate of their own. By this means they could make sure of curricula that secure, not merely the convenience of remote examiners and the maintenance of a futile and fictitious "standard," but education itself. An organisation such as this, combined with systematic inspection on the part of a disinterested Education Department, would fit a larger number of pupils than are now prepared to man the public services, to conduct the businesses and industries of the country, and to proceed to real university work.

One of the gravest difficulties in the paths of the teachers is the amazingly unwise habit, common in too many Natal families, of handing over the youngest children to Kaffir up-bringing. Many parents go so far as to forbid to their Kaffir servants the use of English, and this, together with the intimate domestic contact of Kaffir servants and English children, is arresting the development and corrupting the characters of wholesome Natal boys and girls to a very perilous degree. Little Natal children coming for the first time to school have often to be taught not only to speak English, but even to understand it.

"Successes" in external examinations cannot cure this; they can only cover it. The remedy lies primarily in a rearrangement of the home, but hardly less in a resolute rationalising and humanising of the schools. The European children in Natal schools must be made first to *talk* and describe with precision in English, to read copiously, and to observe and note the things that they see. For these things the common, external, centralised examinations provide in the smallest possible degree, nor can they ever provide as the school itself can.

Where the actual methods of teaching are indifferent, the fault is often traceable to the amateur character of the teachers' preparation for their profession, and it is only fair to say that some of the very best work in the secondary schools of Natal is done by men and women trained in the primary training colleges of England and Scotland. It is, Mr. Barnett's report concludes by stating, to the Scottish and American type of high school that the secondary schools of Natal properly and most profitably approximate; the English type has lost its character, and English education has been wofully retarded by an endeavour to develop the *differentia* of education on lines of social distinction.

The reports contributed by the inspectors contain numerous practical suggestions, of which the following are typical. Commenting on the teaching of English, history, and geography, Mr. Delaney says:—

Written composition is for the most part restricted to essays and essays disguised as correspondence. Seeing that the correction of essays is the most tedious, and in some cases a not very profitable part of a teacher's work, it might be well to have this exercise less frequently and substitute other composition exercises for the sake of variety. Practice might be given, as it is in some of the schools visited, in making up sentences to contain a given word in a natural context, or to show the distinction between words nearly alike in form or meaning; in finding and using similes and metaphors, and in constructing and developing antitheses; in changing direct speech into indirect, and in writing notes in the third person; and in expanding proverbs or other epigrams into longer sentences, using a fairly extensive vocabulary in the process.

In geography, the same inspector reports, most teachers seem to realise that, owing to the absence of a portable text-book of any value, they must depend on themselves, and good work is being done. It is confined too much, however, to political and descriptive geography, though in some schools physical geography is taken by a different teacher. This appears an unprofitable division of labour. All our teaching (and instinct, if not warped by the habit of isolating studies) aims at a synthesis of knowledge, and this cannot begin too soon. There is no reason why the regular teacher of geography should not give a lesson on the origin of coal just after one on South Wales or North Natal; a lesson on coral reefs and islands when dealing with Polynesia or Australia; ocean deposits when speaking of Kent; and winds, tides, currents, rainfall, and earth sculpture at other convenient intervals. For the same reason, the history of conquest, emigration, and exploration should be worked into geography lessons when possible. The historical significance of place-names in South Africa, and of street-names in towns, is not made as much of as one would expect.

THE TRAINING OF ART MASTERS IN HUNGARY.

A VOLUME[1] of regulations, time-tables, and subjects for examinations of the Royal Hungarian Normal School of Drawing at Budapest has recently been issued which contains some interesting particulars of the course of instruction followed by the young artists and teachers in training at this institution.

The book is illustrated with about one hundred clearly reproduced photographs of work done in the various classes of the school. These specimens afford some means of estimating the standard required of candidates for the diplomas which must necessarily be obtained by those who would teach drawing in Hungary. The technical attainment displayed in the whole series is high, but the course of work is of the type followed in conventional academic schools of drawing and modelling that pay little regard to studies not closely connected with the education of professional painters and sculptors. This seems but a poor intellectual equipment for those who may presently have to depend upon the habits of mind and methods of study acquired here, not only for the further development of their own artistic careers, but, should they follow the teaching profession, of those of their pupils also.

We have no evidence of any aim beyond the mastery of a stereotyped routine of drawing and modelling culminating in work from the figure. There is no study of art of a nature calculated to enlarge the vision or stimulate the acquisitiveness of the young student, such as underlies the entire course of work at our own training college for teachers at the Royal College of Art, South Kensington. Examination of the architectural work shows that it amounts in practice to a series of exercises in perspective, the projection of shadows, and laying on of flat washes of water-colour. It arises directly from an elaborate

[1] Extrait du réglément de l'Ecole normale royale hongroise de dessin et du Séminaire de professeurs de dessin à Budapest. 30 pp. + xlvii. plates. 71, Avenue Andrassy, Budapest, 1904.

course of drawing from geometrical models, and maintains this character throughout. The so-called original compositions done in the highest architectural classes show off knowledge of drawing work admirably, but have no educational value beyond this. The future artist or teacher is not introduced in any way to the study of buildings, their construction, uses, or history.

The drawings of ornament are good. The study of some examples of traditional Hungarian decorative art is included in the course, but this sound preparatory work results most illogically in the production of the wildest freaks of the "new art" in the design classes. This displays a most lamentable absence of method, the beginning and the end having no obvious connection whatever. Neither have the fine studies from nature—of plants, shells, insects, &c.—any apparent refining influence upon the abstractions perpetrated in the school of design.

In all kinds of work from nature, from still life and from the head and figure from life, the instruction is on firmer ground, careful observation being evidently insisted upon, with the good results always to be expected from this.

We cannot but regret that the syllabus of the Royal Hungarian School does not provide a more educational course of building and designing. If the scope of the work is to be limited to drawing, the incomplete and misleading introduction given in other subjects would be better omitted. The development of careful, accurate draughtsmanship is very essential to an art education, but drawing alone will not be of assistance to a right understanding of the first principles of architecture and design. It is only by gaining insight into first principles that even the most elementary course of study of these subjects can be set upon a firm and sure foundation.

HISTORY AND CURRENT EVENTS.

A NEW play, *Der Todte Löwe*, by Dr. Oskar Blumenthal, which was to have been produced at the Berliner Theatre this season, has been prohibited in Berlin by the chief of the Berlin police, in his capacity as dramatic censor, upon the ground that the author has drawn upon contemporary events which are still in the recollection of the public. The play deals with the relations of a young and impetuous King of Castile with an old and tried Minister of State. The characters are fictitious and the date assigned to the action is the middle ages. The author alleges that he derived his first inspiration from an account of the circumstances in which the Prussian minister Vom Stein was dismissed, but, as the plot developed, he was admittedly influenced by the recollection of the events of 1890, which led to the retirement of Bismarck. The *Vossische Zeitung* exclaims in amazement: "Are we living in Servia or the East, where history is made behind the scenes . . . or in a modern constitutional State, in which every act on the part of those in high places is performed in the public eye, and is subject to the verdict of public opinion?" Such is the condition of things in Germany. We sympathise with Dr. Blumenthal as a fellow-commentator on "history and current events."

THE German Emperor is said to be endeavouring to promote better relations between the Italian Government and the Papacy. The effect would be, so it is also said, to bring the Emperor William within measurable distance of realising his lifelong dream—"the revival of the Holy Roman Empire in fact, if not in name, under Hohenzollern leadership." To comment on this adequately would be to tell the story of Europe. We must content ourselves with mentioning one or two points, referring our readers to Dr. Bryce's "Holy Roman Empire," a new and revised edition of which has lately been announced. Of what is the German Emperor thinking? Of that state of things in the twelfth and thirteenth centuries when the German king, elected by the seven electors, was more or less actually king in Germany and in Italy, and had relations of a peculiar kind with the Bishop of Rome—the Pope of Western Europe? In theory, both Emperor and Pope were God's viceroys, the one in temporal, the other in spiritual matters over the whole world, whose enemies were the Moslem outside and heretics within. In fact, they were perpetually at war with one another over the limits of temporal and spiritual, and in 1300 Dante laments over the Papal victory, when "the sword was grafted on the crook." Is *this* the fact which Emperor William desires?

THE nineteenth century saw at its beginning the last relics of the Holy Roman Empire finally disappear, if indeed such foundations of European life and thought can entirely disappear. In 1870-1 it saw the revival thereof in the form of the German Empire and the kingdom of Italy, then consummated at Versailles and Rome. Later still, the Italian kingdom, the German Empire, and the Austrian power which had been expelled from Germany in 1866, formed a Triple Alliance against their foes of East and West, the Greek Church and the French Revolution. That Triple Alliance, still in existence, may be regarded perhaps as still another form which "the ghost of the deceased Roman Empire" has taken to itself. But the Italian kingdom has a chronic quarrel with the Papacy over the ownership of territory, specially the city of Rome (except the Vatican Hill), which is popularly called the "temporal power" of the Papacy. It is this quarrel which, perpetuating one aspect of the mediaeval contest of Papacy and Empire, prevents the realisation now, as it prevented it then, of the complete establishment of the Kingdom of God on earth as understood by the members of the formerly Catholic churches, and which the Emperor William now wants to heal.

BUT the Emperor William wants to reconcile Italy and the Papacy in order to revive the Holy Roman Empire *under Hohenzollern leadership*. Austria, whose rulers were for more than 350 years all but continuously presidents of the Holy Roman Empire, is still to be excluded. The old contest between Prussia and Austria is not to have a chance of reviving, or, would it not be better to say, is still to continue in the form of constant exclusion of the Hapsburg? The mistake which Frederick William IV. of Prussia made in 1848—the refusal of the Imperial crown—is to be reversed, and the Hohenzollern is to wear the orb and sceptre which were so long—are they not still?—at Vienna. And the revived Empire is to be directed against the thousand-year-old enemy of the German race. When Moltke was asked in 1870-1, against whom he was fighting, his reply was laconic—"Against Louis XIV.!" Italy is to be courted by Germany "in order to throw cold water on the resuscitated sympathy between Italy and France." These are but "dreams." But they are dreams of the ruler of a country whose dreams of 1806 were fulfilled in 1870-1. And the Holy Roman Empire is perhaps not yet dead.

Coleridge's Rime of the Ancient Mariner. By P. T. Creswell. lv. + 62 pp. (Macmillan.) 1*s*.—This edition is perhaps, considering its thickness, to be considered a mere booklet; but we make bold to say that no edition of "The Ancient Mariner" printed in any recent year can hold a candle to it for editorial thoroughness. It is delightful. Not only is the biographical notice of Coleridge well done, it is one of the best short accounts of him in all his strength, and also in his many weaknesses, which any teacher need peruse.

ITEMS OF INTEREST.

GENERAL.

WE understand that the annual meeting of the Modern Language Association will take place at Manchester on January 12th and 13th, 1905. Advantage is taken of the president for this year—Prof. Michael Sadler—being professor at the University of Manchester to hold the meeting in the north, as was done in 1900 at Liverpool. In addition to the usual literary and pedagogic addresses and discussions, it is proposed to invite some famous French scholar to deliver an address. It is hoped at Easter that the Modern Language Association will be able to return the hospitality of their French colleagues who invited them to Paris last Easter. Thus does the *entente cordiale* become an actual fact.

ON October 20th the Committee of Management of the Common Examination for Entrance to Public Schools received a deputation of the Modern Language Association, consisting of Prof. Rippmann and Mr. Payen-Payne. While expressing general approval of the first papers in French and German that were set last June, the deputation drew attention to certain ambiguities in the grammar questions and to the undesirability of introducing into the paper idioms that may be crammed. While acknowledging the difficulty at present of having an oral examination, the deputation expressed their opinion that no examination of young boys could be satisfactory that did not include an oral test. They suggested as a beginning that a piece of dictation might be given by the modern-language master of the school where the examination was held. It is clear that, if the teaching of modern languages is to be improved, the start must be made in the preparatory school. If those masters who teach on the new lines are to be examined on the old lines, they will be unfairly handicapped. The committee accorded a most courteous hearing to the deputation, and agreed with the majority of their representations.

FOLLOWING on the scheme of International Correspondence inaugurated some years ago by M. Mielle, of Tarbes, comes the Société d'Echange international des Enfants et des Jeunes Gens, which was founded by M. Toni-Mathieu in May of this year. The office of the Society is at 36, Boulevard de Magenta, Paris. Provided that proper care is taken to see that children and students are sent to educated families where there are no other foreigners, we see no reason why such a scheme should not do much to clear our reputation from the accusation of insularity under which it has lain so long.

A GENERAL meeting of the Art Teachers' Guild was held on October 29th at the Kensington High School, Dr. C. W. Kimmins in the chair. Over 150 art teachers were present to hear the report of Miss Spiller on the Berne International Congress on the Teaching of Drawing. Miss Spiller's report followed much the same lines as that published in THE SCHOOL WORLD last month, and was illustrated by some thirty lantern slides showing the character of the exhibits at Berne. Messrs. W. Egerton Hine and S. J. Cartlidge, who spoke after Miss Spiller's address, both deplored the fact that Mr. Mosely had not included an art teaching expert in his recent educational commission to visit the United States.

AFTER distributing the prizes at Warwick School on the recent anniversary of Founder's Day, Sir William Anson gave the boys some good advice. He should like them, he said, to think their work had a bearing on the business of life: "Whether you like your work or whether you do not, whether you succeed or whether you fail, you should have gained something worth having in mental discipline if you have acquired the habit of fixing your attention closely on the matter in hand, of applying yourselves steadily to the work that is put before you, and of bringing your will and your reason to bear on a difficulty which is present. Think of your school life as a whole, and bear in mind that both the games and the work are part of the discipline of life. The true lesson of school life is to work honestly, courageously, whole-heartedly, and to take the work that comes in your way without picking and choosing."

TO pave the way for the International Congress on School Hygiene which is to be held in London in 1907, the Royal Sanitary Institute, with the approval of the International Committee, has arranged to hold a conference at the University of London next year on February 6th, 7th, 8th, and 9th. Sir Arthur Rücker will deliver the opening address, and the next day will be devoted to a discussion, under the presidency of Sir Lauder Brunton, of the physical and mental development of school pupils and their physical inspection. The building, equipment, sanitary inspection, and control of schools will be the subjects considered on the following day, when Sir William Anson will take the chair. The training of teachers and scholars in hygiene will be advocated on the concluding day. An exhibition of apparatus and material used in the construction and equipment of schools will be held during the conference.

IN the last report of the late Technical Education Board of the London County Council special attention is directed to the progress made in the provision of secondary education during the past eleven years. The report shows that seventeen chemical laboratories have been equipped in new buildings, generally in wings added to existing school premises, and three rooms used for class purposes have been converted into chemical laboratories. Four large rooms have also been fitted up for practical work in physics and chemistry. Sixteen physical laboratories have been equipped in new buildings, and ten large class-rooms have been adapted for practical work in physics, in addition to the four mentioned, in which practical work in chemistry is also carried on. Thus fifty laboratories have been equipped in secondary schools for boys with bench accommodation for over 1,200 pupils at work simultaneously, or 6,000 pupils working fo one day a week. Twenty-five science lecture-rooms have been provided, sixteen of these being specially constructed for the purpose in new buildings, and six adapted from ordinary class-rooms. A large number of additional science-masters have been appointed as a result of the Board's maintenance grants. The improvement with regard to the science teaching in secondary schools for girls is almost as marked as that in boys' schools. Laboratories have, in some cases, been provided for practical work in physics, chemistry, and botany, and some of those in existence have been equipped suitably to meet modern requirements.

THE report of the City and Guilds of London Institute on the work of the Department of Technology for 1903-4 points out that the encouragement now offered by the Board of Education to the teaching of technology is doubtless among the causes that have contributed to the large increase in the number of students in the Institute's registered classes. Compared with the figures of the previous year, those for 1903-4 show a distinct improvement. In the different branches of technology, the number of students registered as attending classes in the United Kingdom was 41,089, as compared with 38,638 in the previous year; and the number of examinees was 20,051, as against 17,989. There is, too, a further increase in the number of candidates for the Teachers' Certificate in Manual Training. By including all these different classes of candidates, the total number of examinees in 1903-4 was 20,535, as compared with 18,258 in the previous session.

OXFORD men have been remarkably successful again this year in the Civil Service competition for higher division clerkships and other important posts. We learn from the *Oxford Magazine* that Oxford can claim as many as forty-six out of eighty-seven successful candidates, as well as the first place on the list. Oxford has secured ten places out of the first twelve, seventeen out of the first thirty, and twenty-seven out of the first fifty. "No one school," the *Oxford Magazine* states, "has done as well this year as St. Paul's did in 1903. Clifton, Manchester Grammar School, Marlborough, and Rugby are equal with four apiece; but as the Marlburians include the first and sixth men, while the highest Cliftonian is twenty-second, Manchester's best twelfth and twenty-seventh, and the first Rugbeian thirty-sixth, Marlborough may be said to have done best. Cheltenham, St. Paul's, Wellington, and Winchester secure three places each; Uppingham, Rossall, Merchant Taylors', George Watson's College, and Dulwich two apiece; Eton and Malvern, which did well last year, only having one each now."

SOME interesting experiments on the sterilisation of school-books have recently been carried out for the St. Thomas' Rural District Council, Exeter, by Mr. T. Tickle, the city analyst of Exeter, and the medical officer, Dr. Farrant. Bacterial threads placed in books one inch thick were found uniformly sterile after the process of steam sterilisation for half an hour. Thicker books require a longer period to produce sterility. Books with paper covers are uninjured by the steam, but those with leather backs are spoilt by the process. Some medical officers recommend that, instead of adopting the steam process of sterilisation after an epidemic in schools, the books should be placed in the sunshine and frequently circulated in air. Some authorities appear, however, to have doubts as to the efficacy of mere exposure to sun and air.

COMMENTING on the recent correspondence in *The Times* as to the advisability of instituting "colonial" classes at our public schools, the Rev. E. J. Bidwell, headmaster of Bishop's College School, Lennoxville, Quebec, expresses the following opinions: He thinks that, so far as Canada is concerned, it would be better to have boys destined for life in the colonies given a good literary education up to the age of, say, sixteen, and then have them sent to Canada for a couple of years' technical training before they start for themselves. The advantage of this plan would be that the young fellows would have the opportunity of forming friendships among their fellow Britons of the same age, and of adapting themselves to the customs of their new country, which, however strange they may seem to the Englishman at first sight, are, as a rule, quite the best for that country, and in any case much better than a servile imitation. Lack of adaptability and misunderstanding of the country and its ways have wrecked, says Mr. Bidwell, far more men than technical ignorance. Mr. Bidwell goes on to advocate that parents who require business openings for their sons, and find the way blocked in England, should send them for a year or two to a good school in Canada, where they would mix with what answers to the "public school" class in England, and would have little difficulty in getting positions ultimately. The cost at first would be greater, but the chances of promotion are more numerous, and the boy would start with a number of useful friendships and a working knowledge of the conditions of the country.

WE have received a copy of the second annual report of the Education Committee of the City of Manchester, that, namely, for 1903-1904. In addition to much other valuable information we find that the reorganisation of the higher-grade schools of the city has been brought to a successful conclusion during the year. The higher-grade schools formerly conducted at Ardwick, Birley Street, Cheetham, and Ducie Avenue, are now reorganised as higher elementary schools under the regulations of the Board of Education. The late Central School is now constituted as a modern secondary school, known as the Municipal Secondary School, with a course of instruction beginning at twelve years of age, and ending not earlier than the end of the school year in which the pupils will enter their seventeenth year. The school fees have been fixed at £3 per annum for the children of ratepayers of the city and £4 10s. for the children of non-ratepayers. The reorganisation of the school took effect from August 15th last, and there are at present 990 pupils (599 boys and 391 girls) on the books of the school. Of these, 215 are free scholars. The school is now filled to the utmost extent of its accommodation, and large numbers of applicants are awaiting vacant places.

THE report gives particulars concerning an interesting educational experiment which has met with much success. The Manchester Education Committee noted with satisfaction the establishment of a country school for the benefit of Manchester children, and on its recommendation the Board of Education has consented to recognise the school attendance of children thereat. A corrugated-iron school building, with dormitories and dining-hall to accommodate eighty children, has been erected at Knolls Green in Cheshire, in a thoroughly rural spot, on about five acres of land. Relays of children, boys and girls alternately, have been sent with their teachers from the Manchester elementary schools during the summer months. The children carried on a modification of their ordinary school work, giving much time to object-lessons on their rambles, to gardening, and to open-air pursuits of various kinds. The time-tables have been so arranged that the greatest possible good may be got out of a short stay in the country. The children's attendances were counted, with the approval of the Board of Education, in their own schools. A trained nurse has been appointed matron, and every care has been taken of the children's health.

AMONG numerous valuable appendices attached to the report, one will be of particular interest to our readers, namely, that referring to the supply of secondary and higher education, including information as to the courses of study in evening schools within the City of Manchester, together with further information as to the supply of secondary education and of evening school instruction in districts contiguous to the city. The returns have been drawn up by Mr. J. H. Reynolds, and deal with every grade of education other than elementary. University and technical education, the education given in public secondary schools, in pupil teachers' centres, in other secondary schools, in higher-grade schools, and in municipal and other evening schools, and secondary and evening instruction outside the city, are all dealt with exhaustively. Manchester has done well thus to acquaint itself with the existing provisions made for secondary and higher education as a preliminary to the completion of a thoroughly organised and duly graded system of municipal education.

THE recent report on the Geneva School of Industrial Arts, issued by the Education Committee of the County Council of the West Riding of Yorkshire, provides further evidence of the general desire in this northern area to develop a well-organised and modern system of education. Last summer the Committee arranged for certain of their art-masters to attend for six weeks' work at the Geneva school. The report contains extracts from a lengthy communication received from the administrator of the Geneva school, M. L. Béchérat Gaillard, on the work and attendance of the Yorkshire art-masters, and also a summary of the reports submitted by the art-masters to the Committee on the arrangements of the Geneva school. Numerous suggestions are offered by the art-masters for the consideration of the Com-

mittee, and among these is one for the establishment of one or two schools of which the aim should be "Art in its Relation to Industries," and wherein practical demonstration and instruction in each craft or subject should be given by a specialist, and where the consecutive working time of the student is made to extend over some years. These schools would turn out much better art workmen than the ordinary workshop apprenticeship. The crafts that are predominant in the West Riding, it is suggested, should receive primary attention, such crafts as are of general application in the United Kingdom receiving secondary attention. The report may be commended to the attention of all who administer art schools or who are responsible for art instruction.

IT is not sufficiently realised in this country that many of our Colonies possess thoroughly organised Education Departments and a well developed system of education. The twenty-seventh annual report of the New Zealand Minister of Education, which deals with the work accomplished during 1903, is more than enough to satisfy the student of education that New Zealand at least realises fully the importance of the education of its future citizens. The report runs to 115 foolscap pages, and is concerned with all departments of educational work. Among other matters of interest dealt with in the report is the question of the education of the native races. So far as it is possible to find suitable openings, the report states, apprenticeships to trades are arranged for native boys that prefer such work to the ordinary scholarship. At present there are four apprentices under the care of the Education Department. One boy in the service of the Railway Department is doing good work at the School of Engineering, Canterbury College. The after-career of the most promising young Maoris is a matter that has received the attention of the Government. The most desirable career for girls to follow appears to be that of nursing, and since 1898 the Department has had in operation an arrangement for training senior scholars from the two native girls' schools. University scholarships are also offered to Maori youths of marked ability, in order that after matriculation they may take up the study necessary for a profession. Two young men have been studying medicine at Otago University, and one of them has just attained the distinction of being the first person of Maori blood to obtain a New Zealand qualification for the medical profession. Other scholarships have been granted in law. Maori children attending the ordinary public schools, and who pass the Fifth Standard before the age of fifteen, may obtain allowances of £20 a year for two years to enable them to attend higher schools or to enter upon industrial pursuits.

EDUCATIONAL authorities in this country are not alone in experiencing a dearth of properly qualified teachers for the elementary schools under their charge. The report of the Education Department of Western Australia for 1903, which has been received, calls attention to the existence of the same difficulty in the antipodes. The Minister of Education states that the number of scholars in the schools of Western Australia continues to increase faster than the home supply of teachers, and the supplementing of this deficiency is a cause of constant anxiety and difficulty to the Education Department. At no time during 1903 were the schools really fully staffed. Liberal staffing is the truest economy, but at present the Department is forced to take as a maximum what should be a minimum, and in many cases small schools have to remain closed for want of teachers. As the supply from outside is always likely to remain uncertain, the training of a larger number of teachers in Western Australia becomes an imperative necessity. Steps are, we find, being taken to ensure a more satisfactory education for pupil teachers, who are now, as in this country, expected to teach only for a moiety of their time. The other portion of the school hours is very rightly devoted to the education of the pupil teacher himself.

THE London County Council have decided to seek in the next Session of Parliament for powers to authorise that the mansion, brick stable, and machinery-house at Avery Hill, Eltham, may be used as a residential training college for teachers. The land to be appropriated, including the area occupied by the building, is not to be more than four acres, and the purchase money when determined is to be used to buy other land as a set-off to the appropriation of four acres of what is now a public park.

SCOTTISH.

THE Senatus of Edinburgh University has resolved to establish a local committee, under the terms of Article 91 of the Code, for the purpose of training teachers under the *aegis* of the University. Local committees for this purpose have been in operation in other university centres for a number of years, and the number of students in training has shown a steady increase. While it is extremely satisfactory to find the training of teachers taken up officially by the universities, it would be rank ingratitude not to acknowledge the hearty encouragement given by the regular training-college authorities to attendance at university classes. Since the year 1878, the training colleges have not only permitted but encouraged attendance at the university of all students who proved their fitness to benefit by it, and in all such cases they have paid the graduation and class fees. As a consequence of this enlightened policy, almost one-third of the male teachers in elementary schools are graduates, while a large percentage of the remainder have received part of their education in a university. The new departure should lead in the near future to a considerable increase in the percentage of graduates, and should directly tend to raise the status and emoluments of the whole profession.

MR. R. B. HALDANE, in opening the session of the Edinburgh German Society, contrasted the educational systems of Germany and this country. In the former, secondary education is, he said, the binding and central feature of the whole scheme, being in close touch with the primary schools below, and with the universities and technical colleges above. In this country, secondary education is the department in which we are most backward, and the weakness in this vital part reacts prejudicially both on elementary and technical education. Mr. Haldane said he did not believe that a slavish copying of the institutions of other countries would ever secure satisfactory results. Our educational system in its broad characteristics reflects the individualism, independence, and self-reliance of our race. The public-school *régime* turns out more men with the "governing mind"—the capacity to rule—than any other scholastic institution in the world. It is just possible, however, to retain all these distinctive features, and, at the same time, to combine with them the thorough organisation and careful grading of the German system.

SIR HENRY CRAIK has been selected as prospective candidate for the parliamentary representation of Glasgow and Aberdeen University by the Conservative and Liberal Associations of these universities. It is recognised on all hands that Sir Henry's distinguished position as a man of letters, and his unique experience of the working of the educational systems both of England and Scotland, peculiarly qualify him to represent a university constituency. A large and representative committee has been formed to further his candidature, and the promises of support already received have been most satisfactory. After he demits office, Sir Henry Craik will lay his views before the electors.

SPEAKING at a meeting of the Edinburgh Branch of the Educational Institute of Scotland, Dr. Arthur Somervell, Examiner in Music to the English Board of Education, criticised the position taken up by one of the ordinary school inspectors in regard to Scottish songs. These the inspector holds to be unsuitable for use in schools because they are too high in pitch, too sentimental in character, and are filled with a spirit of disloyalty to our sovereign. Dr. Somervell admits that many of the Scottish songs, on account of their wide range of interval, are unsuited for young voices, but there is a superabundance left, all of which are ideally adapted for school use. In regard to the second objection, that they are too sentimental, he thought that it required the courage of a Scot to tell the Scottish people that the songs of Burns, of Lady Nairne, and Walter Scott are too sentimental. The objection that the songs are Jacobite in feeling is, he maintains, equally hypercritical. Nobody now-a-days cares a single iota for Bonnie Prince Charlie save as a matter of sentiment. Jacobitism is much more extinct than the dodo, but the feelings of devotion, of loyalty, and self-sacrifice which pervades these songs will stir men's hearts to the end of time, and are too precious a possession to be cast aside through any sham sentimentalism.

IN consequence of the judgment of the House of Lords in the "Church Case," the directors of the U.F. Training College for Teachers in Edinburgh, Glasgow, and Aberdeen, have been compelled to hand over these buildings to the representatives of the legal Free Church. In intimating to the agents of the Free Church that such transference is to be made, the Directors express their regret that no compromise has been arrived at in regard to these colleges, since they partake more of a national than of a denominational character. As it is notorious that hardly a single student in the three training colleges belongs to the ecclesiastical body that has been granted legal control, the absurdity of the whole position is evident. The situation thus created should give irresistible force to the demand for nationalising these institutions, and making the training of teachers a great department of the State. The failure to pass last year's Education Bill will be a blessing in disguise if it leads to the inclusion in next Session's measure of provisions for buying over the existing training colleges and putting them under direct State control.

THE following rearrangement of the inspectoral staff has been intimated by the Scotch Education Department. Mr. A. E. Scougal succeeds the late Dr. J. A. Stewart as Senior Chief Inspector of Schools in Edinburgh, Mr. A. R. Andrew goes to Glasgow as Chief Inspector of the Western Division. Mr. W. G. Fraser, Junior Inspector, is promoted to be one of His Majesty's Inspectors, on the vacancy caused by the death of Dr. Stewart. Mr. David Thompson, Sub-Inspector, is nominated as His Majesty's Inspector in place of Mr. J. Macleod, who retires at this time under the age limit. The removal of Mr. Scougal from the Western district means the loss of one who has taken the deepest interest in educational affairs outside his strictly official duties. He has been a prominent figure at all educational gatherings, and frequently called teachers together in conference to discuss details of organisation and method. His term in the West of Scotland has meant a period of "hustle" for all who were content to stand still in the good old ways and shut their eyes to all the advances in methods and principles that have taken place. But for faithful effort of every kind he had the frankest recognition and the heartiest appreciation. Mr. Andrew, his successor, possesses to an exceptional degree the confidence of the whole teaching profession, and takes up office with the good will of every member of it.

BY the will of the late Mr. A. Connell Maclaren, surgeon, Harley Street, London, a sum of £10,000 has been left in trust for the purpose of increasing the salaries of school teachers in Kilmarnock, or for otherwise improving the educational advantages of the town. The parish of Comrie has been left £5,000 for similar purposes, and an equal sum goes to St. Marylebone, London. It is hoped that a generous interpretation will be given to the testator's express wish to benefit the teachers, but it is certain a determined effort will be made to apply it chiefly to the alternative object "otherwise improving the educational advantages of the town." Legacies for Kilmarnock have been suspect since the great Burns' "Hoax," but the present windfall is undoubtedly genuine.

IRISH.

THE Roman Catholic Archbishops and Bishops, at their autumn meeting at Maynooth, passed a resolution authorising that the statement and resolutions drawn up and passed at their June meeting (a summary of which appeared in THE SCHOOL WORLD in the August number) should be read by the priests from their pulpits on the first Sunday in November, "in view of the persistent refusal of the civic right of Irish Catholics to suitable university education, and of the insidious attempts constantly on foot to undermine almost everything that remains sound in the fabric of Irish education, especially in the primary stage, and the consequent need of arming our people with due knowledge of the threatened danger."

A GENERAL meeting of the Catholic Headmasters' Association was held in October, at which great satisfaction was expressed at the extent to which the Intermediate Education Board had met their views, and some further important suggestions were made. It was decided to elect a small committee, consisting of two representatives of the Catholic Headmasters' Association, and one representative of the Convent Schools' Committee, to ask the Protestant Associations to name two representatives of the Protestant Headmasters' Association and one representative of the Protestant Headmistresses' Association, to empower the joint committee so formed to represent the association when necessary, and to request the Intermediate Board to recognise it as entitled to speak for all the schools represented in the various associations by which it is elected. This was supported by the Protestant Schoolmasters' Association; the committee was nominated, and, in answer to a request to the Intermediate Board to receive it, it has been requested to lay its views not before the Intermediate Board itself, but before the Assistant Commissioners.

A FURTHER important resolution, which was also supported by the Protestant Headmasters' Association and the Central Association of Irish Schoolmistresses, was to request the Senate of the Royal University to accept in lieu of the matriculation examination a pass in the Senior Grade Intermediate in the subjects specified as necsssary for matriculation. Request was also made to the Intermediate Board to re-examine some of the English composition papers in the Junior Grade; and complaints were made as to the position of Irish, the undue delay in publishing the results, and the length of the science and music programmes.

DR. CULVERWELL, F.T.C.D., has again this Michaelmas Term been delivering in Trinity College a series of six lectures on education, open free to the public, and of great advantage to teachers in the schools of Dublin and the neighbourhood. The lectures are being given on Wednesdays at 4.15 p.m. The titles of the first three were "The Training of the Memory," "Mind-Wandering and the Training of Will," and "Japanese Education (1) from the administrative side, (2) from the school side." The other three are on the teaching of geometry, and

are in connection with the new syllabuses of Dublin and Cambridge Universities.

THE annual degree day at the Royal University was this year entirely marred by a most disgraceful scene of rowdyism on the part of the undergraduates. Having been refused admission by ticket, they forced an entry to the gallery and prevented all attempts to carry through the proceedings, and the Chancellor, Lord Meath, had to abandon the delivery of his address. Honorary degrees of D.Sc. were conferred upon Sir William Crookes, F.R.S., and Sir James Dewar, F.R.S. It is stated that this year there has been a remarkable increase in the number of students attending the examinations. In 1903 the numbers were: summer, 2,012; autumn, 850; total, 2,862. In 1904: summer, 2,184; autumn, 930; total, 3,114. Increase, 252.

AFTER the conferring of degrees, the Irish Association of Women Graduates held a meeting in the Royal University by permission of the Senate. A resolution was passed suggesting to the committee of the Association to consider means of obtaining training for secondary teachers in Ireland in view of the necessity of such training for all registered teachers in the future, and to approach on the subject the Irish Universities already giving diplomas in education. It was pointed out that while diplomas were established there was no attempt to supply practical training beyond some isolated lectures. Another question before the Association was the recent action of the Intermediate Board in refusing to allow anyone teaching in a school or college preparing for Intermediate examinations to act as an examiner under the Board. The injury to education becomes serious if there is to be a complete divorce between teacher and examiner. The suggestion is not, of course, that a teacher should examine in the subjects of the grade which he or she is engaged in teaching, but in other subjects or in other grades.

IN connection with the Rathmines School of Commerce, Sir Horace Plunkett has offered to provide £100 out of an unofficial fund for a course of ten lectures having relation to the work of the school and dealing with various subjects of commercial importance to Ireland.

WELSH.

IN the University College of North Wales, Bangor, the departments of French and German have been separated. German is taught in comparatively few Welsh Intermediate schools, and every encouragement of the higher study of German in Wales is greatly to be welcomed.

THE Council of the University College of Wales, Aberystwyth, has resolved, in the event of the Welsh National Library being placed at Aberystwyth, that they will transfer their very valuable collection of Welsh books to the National Library as a national trust, subject only to the condition that the library is to be located and to remain at Aberystwyth. The cost of the building, inclusive of the site, is estimated at £20,000. Promises amounting to £1,600, together with the site (valued at £2,000) make up £3,600. The following have consented to become trustees of the building fund: Lord Rendel, Lord Tredegar, Lord Kenyon, Mr. Henry Owen and Mr. David Davies, Llandinam.

THE Central Welsh Board's annual report shows continued progress of the Intermediate schools. Suggestions are made that teachers may possibly, in the future, be enabled to co-operate more with examiners, particularly in non-competitive examinations. The Central Board report that the Treasury has made a grant of £700 in supplement of the Board's finances.

MR. BRYN ROBERTS, M.P., has declared his opinion that the Cardiff policy in connection with the Education Act is likely to be impracticable and unworkable. This policy, it is to be remembered, is to let the children earn no grants, by withdrawing them from the elementary schools and providing them with instruction in chapels and vestries. Mr. Lloyd-George hopes to get £100,000 from England, but Mr. Bryn Roberts asks whence this is to come. Mr. Bryn Roberts favours the idea of a compromise. He would suggest that the county authority should take over the whole burden of the schools, including their maintenance and repairs of buildings, receiving in return the sole right to appoint the whole of the secular staff and to control schools. Churchmen would be enabled, by the money they would save in repairs, to bear the cost of religious teaching. The meeting in Mr. Bryn Roberts' constituency passed a unanimous resolution confirming the Cardiff policy. It is understood that Mr. Lloyd Morgan, M.P., similarly objects to being associated with the methods proposed by the Cardiff Convention.

A REACTION has set in in the City of the Convention. In Cardiff the Conservatives, by the recent municipal elections, have come into a majority on the Town Council. They have decided to reverse the educational policy. It will be remembered that the Cardiff Town Council refused to co-opt members of the Education Committee when requested to carry out this provision of the Act of 1902 by the Board of Education, except in the case of two women members. The Conservatives have now decided to have an Education Committee consisting of seventeen Conservatives and eleven Liberals. The developments will, at any rate, be watched with interest.

THE terms agreed upon for the transfer of the Bontnewydd National School to the Carnarvonshire Education Committee deserve to be noted closely, for they may become the precedent for other cases. The Education Committee has expressed its willingness to offer the same terms to all Church schools in the county. The trustees agree to let the school buildings to the Education Committee, for five days a week, from 9.45 a.m. till 5.15 p.m., and on three evenings a week in addition. The lease is for twenty-one years certain; the annual rent £20, with option of renewal. The trustee has to contribute a fair proportion of cost of cleaning, &c. The trustee is entitled to provide religious instruction from 9 a.m. to 9.45 a.m. daily, and teachers of the school may take part in such instruction (if they wish). The other conditions relate to extension of the building and other questions of treatment of the property.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Goethe, Egmont. Edited by J. T. Hatfield. xxvii. + 134 pp (Heath.) 2*s.* 6*d.*—Prof. Hatfield's book of German lyrics prepared us for something better than this edition of "Egmont." It is designed "for the practical use of students as they are," whatever that may mean; it was "begun eight years ago, and has been worked upon with fair persistency." Probably the editor would have done better work if he had concentrated his efforts on the book for a shorter period. The introduction s full of tall and slipshod writing. It will suffice to quote a few sentences: "The spirit of his [Goethe's] works is an inspiring example of the American spirit." "It [the 'demonic' element] plays skittles with our best-laid plans." "She [Klärchen] is a full-blooded child of nature, who 'goes it blind,'" &c. "That

elegant product of our native literary soil, Motley's 'Rise of the Dutch Republic.'" The text is well printed. The notes are very slight. Altogether a book which we cannot recommend.

Goethe, Hermann und Dorothea. Edited by Julius F. Schilling. 36 pp. (Blackie.) 6*d.*—It seems a pity that anyone should read "selections" from Goethe's epic; but if it must be done, then this little volume will be found suitable. It is true the type is rather small, but the proofs have been read with care (*Wetzler* on p. 3 is an awkward slip), and the notes are quite satisfactory.

Deutsche Sagen. Edited by M. Ninet. vii. + 163 pp. (Marshall.) 1*s.* 6*d.*—The four stories contained in this volume are "Adelmar und der [*dem* in the headlines!] Delphin," "Schloss Weissenstein," "Sagen von Rübezahl," and "Sagen von Wittekind." They are suitable for an intermediate class, and tolerably well illustrated. The text is in English type, and not too carefully printed; the vocabulary is not complete.

Exercises in German Conversation and Composition. By E. C. Wesselhoeft. 122 pp. (Harrap.) 1*s.* 6*d.*—The Introduction contains some hints as to the position of the verb, separable prefixes, indirect speech, and prepositions. The exercises consist of a convenient collection of anecdotes followed by German questions on the text, and English sentences for retranslation. The German-English and English-German vocabularies seem to be complete.

A German Reader. By W. H. Carruth. vi. + 282 pp. (Ginn.) 2*s.* 6*d.*—This neatly printed reader contains stories from Niebuhr, Andersen, Grimm, Zschokke, and Hauff, a play by Benedix, and thirty-six poems by well-known authors, six being translations of English poems by the German poet Freiligrath. Mr. Carruth explains grammatical and other difficulties in notes which are adequate. The renderings are not free from Americanisms (*e.g.*, "Gosh, but it is fine here!"). A number of exercises for practice in grammar are added, and English passages for retranslation, as well as German questions on the text. The vocabulary appears to be complete.

Bedford High School Conversational German Grammar. By A. Meyer. xvi. + 127 pp. (Blackie.) 1*s.* 6*d.*—This grammar is not without interest for the teacher. There are exercises in reading to begin with; the pupils are expected to grapple with German writing and print at the very outset. The stock of words is very large, and there are sentences for translation into German from the first. The texts in Part II. are well chosen. According to the preface, the book is intended for boys and girls between ten and fourteen years of age; we are inclined to think that both in vocabulary and in grammar the demands are excessive and the progress too rapid. Many of the exercises are useful. The book as a whole is the work of an able teacher who has, apparently, singularly gifted pupils.

Junior German Examination Papers. By A. Voegelin. 72 pp. (Methuen.) 1*s.*—This little volume contains seventy-two papers in miscellaneous grammar and idioms. The papers are so arranged that each consists of ten questions, with a maximum of 100 marks. Teachers who prepare their pupils for elementary examinations will find the book distinctly useful.

Dent's New Second French Book. By S. Alge and W. Rippmann. (Dent.) 1*s.* 6*d.* net.—This revised edition of "Dent's Second French Book" follows naturally on the "New First French Book" we noticed some months ago. Experience has served to improve it. It seems churlish to criticise so good a book, but the explanations of unknown words at the bottom of each page strike us occasionally as being more difficult than the word itself. Is translation not a shorter method in some cases? The direct method, carried to its logical extreme, is as bad as the bad old method. There is a slight misprint on p. 236, where the acute accent has fallen off *né*. *Liaison* should be shown in the phonetic transcript of the phrase in which this word occurs, *Jesus est né*, as it is more often used than not.

Edited Books.

The Book of Isaiah according to the Septuagint. By R. R. Ottley. x. + 336 pp. (Cambridge University Press.) 5*s.* net.—In this volume Mr. Ottley has only accomplished half of a very useful task. He has translated the LXX. version of Isaiah so as to bring it to the notice of the general reader and also to the Biblical student who has but a scanty knowledge of the Hebrew language. A second volume is promised containing the Greek text of Isaiah, but for the present the student possesses a very valuable instalment in this one. Mr. Ottley follows the method of parallel translations, one from the Hebrew being on each left-hand page, and on the right the translation from the Greek. The notes are very short, but a general reader or a student commencing divinity will find in these pages not only a couple of good translations, but he can gain from them an outline of the questions at issue between the versions, and parallel renderings which may serve to stimulate his studies. The introduction is a splendid piece of scholarly work, and the "methods of rendering," which Mr. Ottley details at length, will commend themselves to most critics, however keen.

The Work of the Prophets. By Rose E. Selfe. 170 pp. (Longmans.) 2*s.* 6*d.* net.—This volume continues a series which we have had already occasion highly to praise. It follows in chronological order from the volume dealing with the early history of Israel, but no attempt is made to reconstruct the perplexed and difficult history of this period. Attention is concentrated on the prophets themselves, and the value of a volume which is dainty and captivating in appearance is enhanced by some good reproductions of pictures and sculptures of the prophets concerned. The literary style is admirably suited to its purpose, and probably nobody will object to the doctrinal line followed by the writer.

The Hebrew Monarchy. By Rev. A. R. Witham. xii. + 352 pp. (Rivingtons.) 3*s.* 6*d.*—It is no small pleasure to the present writer to have to commend this book as far above the uncandid and one-sided volume which immediately preceded it. This volume covers the period from the reign of Solomon to the Captivity, and it follows the general scheme and principles which distinguish this series; but the editor gives the impression of vigorous and modern views. The results of modern criticism are neither ignored nor belittled; they are frankly admitted and made use of, and yet, by skilful management of his materials, Mr. Witham contrives to acknowledge amply the help that modern scholarship and archæology have given to the understanding of Hebrew history while subordinating all matters of critical debate to the main purpose of his book. He writes from the point of view of a firm but not militant orthodoxy, and the broadest-minded teacher can hardly fail to use this honest and open-minded book without immense gain to himself and his classes.

Milton's Comus. By Rev. E. A. Phillips. l. + 68 pp. (Blackie.) 1*s.* 6*d.*—This volume is provided with one of the best introductions that any educational edition of a Miltonic poem has been provided with for a long time past. In all practical respects the volume is a model for teaching purposes. The notes are learned and full, but admirably clear and adapted to their purpose, and there is a glossary which is severely condensed, but is as valuable as it is happily conceived in being added to this edition.

Gems from the Victorian Anthology. Edited by the Right Hon. Sir Mountstuart E. Grant Duff. (Swan Sonnenschein.) 2*s.* 6*d.*—We gather that this is a selection from the editor's larger work. It is always interesting to see what poems a man of letters particularly likes, and to find publishers who dare to allow an editor to disregard all other considerations. Thus the first twenty-five pages contain only one poem that can be said to be well known.

A Death in the Desert. Edited by Rev. G. V. Pope. (Swan Sonnenschein.) 1*s.* 6*d.*—Is a help and a very plainsailing guide to the would-be reader of Browning, the editor himself being an enthusiast in the study of the master. Browning is best explained by Browning, as Mr. Pope says, and it seems a pity that the student is not more often referred to other poems.

History.

The Ancient World. By E. M. Wilmot-Buxton. xxvii. + 244 pp. (Methuen.) 3*s.* 6*d.* *Ancient History.* By W. H. Salter. xii. + 256 pp. (Horace Marshall.) 2*s.* 6*d.*—Both these books are good, each in its own way. The stories are well told, there are many illustrations, maps and an index. But Mr. Salter understands by "Ancient History" only the Greek and Roman history which is studied in connection with the classics, giving only his first chapter to "Egypt and Western Asia," whereas Mr. Wilmot-Buxton's main subject, treated in seven "sections," is the history of Egypt, Babylonia, Persia, Phœnicia, the Hebrews, Carthage, Hindus, and Chinese. Deliberately, because "more easily accessible," he shortens the sections which he devotes to Greeks, Romans and their enemies, the Parthians. Another contrast between the two books is that whereas Mr. Salter omits "the myths and legends which until recently held so conspicuous a place in the teaching of the early history of Greece and Rome," because "the pupil will have less to unlearn," Mr. Wilmot-Buxton devotes "as much space as possible to the beautiful myths and legends of the past." We prefer the latter method on the ground that, though they should be told *as legend*, their omission robs our children of interesting stories to which constant allusion is still made. Besides, fairy stories are the proper food of childhood. We wonder whether there is much good served by the presentation of ancient history as conceived by Mr. Wilmot-Buxton. There is much narrated history, stories of wars and conquests. But the perusal thereof leaves us much where we were before. For want of the necessary knowledge, or perhaps because there *was* no development, we miss the interest which comes from the constitutional history of European countries. And thus, while this book should certainly find a place in the school library, we should be sorry to add the subject thereof to the school curriculum.

Readings in European History. By J. H. Robinson. xxxi. + 551 pp. (Ginn.) 7*s.*—The sub-title describes this book as "a collection of extracts from the sources chosen with the purpose of illustrating the progress of culture in Western Europe since the German invasions," and thus the first volume embraces the period "from the breaking up of the Roman Empire to the Protestant Revolt." It is an excellent book. There are 230 extracts of all kinds translated into English. Philosophical writings, chronicles, decrees of councils and of emperors, correspondence of crusaders and others, the Koran, legal formularies, miraculous tales, troubadour songs, &c., have all been drawn on. Besides an illuminating introductory chapter, every extract has a commentary, every chapter a threefold bibliography, and there is an index. We do not like "Charlemagne" and are rather surprised to find the expression, and it is not always quite clear where the comment ends and the extract begins, but these are mere trifles. The perusal of the book will make history more living, and the study thereof by our teachers and elder scholars will go far to give them a knowledge of history and, above all, a desire for more.

Duruy's History of France. xxvi. + 712 pp. (Dean.) 8*s.* 6*d.* net.—The title-page tells us that this edition of the most popular school text-book of history in French schools is the result of an abridgment and translation of the seventeenth French edition by Mrs. M. Carey, with an introductory notice and a continuation to the year 1896 by Dr. J. Franklin Jameson, Professor of History in Brown University. It makes a good school-book, and will be safe reading if the teacher will first read some of Freeman's essays as an antidote to the French way of confusing Gaul and France, Franks and French, Karl the Great and Charlemagne, and the consequent false light in which the first thousand years of "French" history is regarded in this and other French books. The maps, the only untranslated part of the book, are also misleading in this respect. We would warn the student against the words "reunion" and "reunite."

A Synopsis of British History. 64 pp. (Oliver and Boyd.) 6*d.*—A good summary of chief events, together with a tabular account of the colonies and a two-page account of the present constitution.

Geography.

Philip's New Physical Terrestrial Globe. With graduated brass half-meridian on bronze stand, 21*s.*; without meridian, 17*s.* 6*d.*—The judicious use of a good globe adds greatly to the value of a lesson in geography. The pupil by its aid obtains a much better idea of the relative distribution of the great land masses and of the great ocean expanses than is possible from separate map projections of the continents, or even from a Mercator's projection of the world. The excellent globe which Messrs. Philip and Son are prepared to supply at the moderate prices mentioned will serve excellently for class-work in physical geography lessons. The land areas are shaded in what are becoming the familiar shades of green and brown to show in broad outline the contour of the continents. The principal countries are defined by clearly-seen red boundary lines. The chief ocean currents are marked by easily-traced white lines on the light blue background which marks the oceans, and the direction of the currents is shown by occasional black arrows. The more important ocean routes are indicated by fine dotted lines in black, by the side of which are numbers giving their distances in nautical miles. As a means of explaining the duration of daylight in different latitudes at various seasons of the year, the inclined axis and graduated meridian will prove very useful. The tropics and arctic and antarctic circles are very properly represented on the globe, but it is difficult to explain why the ecliptic should cross one part of the equator more than another, and for this reason the ecliptic is better not drawn on a terrestrial globe. We advise all teachers of geography who are intending to buy a globe to examine this one before deciding upon their purchase.

The Local Examination Geography of the World. By A. G. Haynes. Edited by George Carter. With 34 maps. 208 pp. (Relfe.) 1*s.*—The plan of this little book would lead one to suppose that no improvement in the methods of teaching geography had taken place during the last twenty years. It is topographical pemmican and little else. The short, highly condensed paragraphs suggest that boys and girls will be set to learn them by heart; and in consequence form the habit of regarding geography, which by reason of its picturesqueness and absorbing interest should be one of the most fascinating subjects of the school curriculum, as an arid and profitless memory exercise. Even on its own grounds the book is often an untrustworthy guide. On p. 9 the pupil is told that "**climate** is

the degree of *heat* and *moisture* of any country or place," and the same page perpetuates the old Gulf Stream fallacy, which is repeated, too, on p. 21. On p. 16 a very unsatisfactory reason for the difference of character of the eastern and western coast-lines of the British Isles is given. On p. 50 the word "outlier," which has a precise geological significance, is used ambiguously, and on p. 108 the monsoons are called, parenthetically, "sea-breezes." These few instances are cited to show that author and editor have not taken trouble to acquaint themselves with modern views of many of the subjects they include in their book. Absolute correctness is, above all things, necessary in a book for beginners.

The Geography of British South Africa. By George T. Warner. 187 pp. (Blackie.) 2*s.*—Mr. Warner here describes in a simple manner the main geographical features of British South Africa. Most space is given to the physical characteristics of the land, its climate and resources, its flora and fauna, and the industries of its inhabitants. The book is well produced, interesting, and likely to be a favourite in schools.

Science and Technology.

Astronomy for General Readers. By G. F. Chambers. xv. +268 pp. (Whittaker.) 1*s.* net.—The best to be said for this book is that it is a cheap and interesting introduction to the study of the astronomy of a generation ago; for little account is taken of the methods and results of astronomical inquiries of recent years. Photographs of celestial objects are now so common in books on astronomy that the drawings of the sun, moon, star-clusters and nebulæ appear very crude. The illustration of nutation of the earth's axis (Fig. 23) has been shown to be hopelessly misleading over and over again, yet it is used. On p. 9 Jupiter is said to have four satellites, though the correct number, five, are described later. A sunspot is said to be "an aperture or rift in the visible surface of the sun brought about by disruptive forces operating below." It is not too much to say that this view is not now accepted by a single astronomer who has given attention to solar physics. No mention is made of helium in connection with the chromosphere, and no account is taken of the spectroscopic evidence of intrinsic light of the corona. Most of the nebulæ are regarded as aggregations of stars so close together as to defy separation by our largest telescopes. The fact is that no nebulæ are distant clusters of stars. Many other inaccurate and misleading statements occur in the book, which can only be read usefully by persons able to revise the text themselves where necessary.

Forestry. By Prof. A. Schwappach. Translated by F. Story and Dr. E. A. Nobbs. 158 pp. (Dent.) 1*s.* net.—As a concise description of the principles of forestry, this book is first-rate. After a short sketch of the development of forestry, there are chapters on forest statistics, forest influences, sylviculture, tending of weeds, protection, utilisation, management, finance and economics. The book should be of service to many teachers and other residents in rural districts, as well as to students of forestry. It is of interest to read that "careful research and exact study of recent years have shown that the climatic influence of forests is quite inconsiderable, and that neither afforestation nor the destruction of forests have any appreciable effect. This may, at least, be said of the British Isles and continental lands in North-western Europe." The popular mistake—still to be found in many books on geography—about the influence of forests upon rainfall must, in fact, be relegated to the limbo of fallacies. The chief action of forests in this respect is to conserve the rain received by preventing evaporation. Curiously enough, though the action of forests in preventing erosion by heavy rains is described, no mention is made of their influence in preserving the rain actually precipitated upon the soil.

House, Garden and Field. By L. C. Miall. x. + 316 pp. (Arnold.) 6*s.*—This book is a collection of short nature-studies of "the living things that share our dwellings, or seek their food in our gardens and fields." It follows the lines of the author's well-known "Round the Year." Like all Prof. Miall's books, it forms delightful and stimulating reading for anyone who is interested in nature-study, and it abounds in hints of the utmost value to teachers. The variety of the subjects treated in its fifty-four chapters is exemplified by the three consecutive titles, "House Flies," "Solar Images on the Pavement," and "The Song of the Skylark." Perhaps the happiest examples of Prof. Miall's style are found in three of the longer chapters, "The Human Hand: a School Lesson," "Hedge and Ditch: a Summer Term's Work for a School Form," and "A School Course on the Structure and Life of Insects." Not the least interesting part of the book is the Introduction, in which the leader of the nature-study movement in this country states his views upon the subject, and explains why he did not think it desirable to write a book furnishing teachers with ready-made lessons on a variety of interesting and easy topics, but rather to start, if possible, the habit of observation and inquiry in the teachers themselves. It would be difficult to imagine a book more likely to do this than the present. The fifty-eight illustrations are by Mr. A. R. Hammond, and are, as usual, beyond criticism.

Elementary Practical Physiology. By John Thornton. viii. + 324 pp. (Longmans.) 3*s.* 6*d.*—We doubt if the title of the book is altogether justified by the descriptions of well-known experiments which occur at intervals in the general text, for, in spite of them, the book is not of a distinctively practical character. On the whole, the accounts of physiological processes are clear and accurate, but a few slips have been allowed to creep in. It is twice (pp. 13 and 167) stated that proteids are the only organic compounds containing nitrogen, and repeatedly (pp. 160-162) implied that proteids are peculiar in "forming tissue." One may also point out that proteids are not the only foods present in peas (*v.* p. 168), and that a rabbit possesses *two* "superior" *venae cavae* (p. 35). The illustrations, 178 in number, are excellent.

Tables for Qualitative Analysis. Second Edition. By A. Liversidge. 123 pp. (Macmillan.) 4*s.* 6*d.* net.—The determination of the relative merits of the numerous publications on qualitative analysis is a difficult task, since they so closely resemble each other in the method of treatment of the subject. Prof. Liversidge, however, treats the subject in a novel and entirely satisfactory manner; for we have not previously seen any set of tables in which emphasis is laid on the *quantitative* nature of qualitative reactions. The student is here required to work throughout with weighed or measured quantities; he is required to use test-tubes which are roughly calibrated into cubic centimetres, and to make frequent use of volumetric apparatus; also, the acids and solutions are of such strength as to be "equivalent." The great economy in chemicals and in time, and the increased educational value of the subject which will result from such methods, are alone sufficient to recommend these tables. Equations of reactions are not inserted, since the author assumes that the principles of the subject will be taught separately by means of short demonstrations; and most teachers will agree that students are seldom so conscientious as to fathom voluntarily the equation applicable to any test, even when it is printed in large type on the page from which they are working. The neglect of preliminary tests, and the absolute dependence on bulky and brilliant precipitates, is another frequent foible of the student, and it is attacked strenuously by the author. These preliminary tests are very complete, and include the *film-tests*—a process seldom described in other tables. It is insisted that, if a student finds by wet processes a substance

which he has failed to detect by preliminary tests which should have detected it, he should be required to repeat the test until it is found; and, if impossible of detection, to state why the test has failed. The student is also taught that the *rare* metals may not be relegated to another branch of chemistry, and that they may be precipitated in the ordinary course of a simple analysis. The reactions of organic substances, including alkaloids, are fully treated. We have no hesitation in saying that these tables justify the old contention that there is much educational value in qualitative analysis when it is properly taught.

Birds in their Seasons. By J. A. Owen. viii. + 145 pp. (Routledge.) 2*s.* 6*d.* net.—As a simple and popular account of British birds, this book may be recommended. The birds are treated in seasonal rather than in scientific sequence, a method which has many advantages in a book which is not concerned with anatomical characters. It is a pity that the illustrations are coloured: the tints are in most cases greatly exaggerated.

Sea Stories for Wonder Eyes. By Mrs. A. S. Hardy. 157 pp. (Ginn.) 2*s.*—This book consists of a number of short stories of various "sea folk," from coral polyps to whales. They are told in the simplest of language, are refreshingly free from inaccuracies, and are beautifully illustrated. A child with a taste for natural history will be charmed by the dainty little volume.

A Handbook of Plant Form. By Ernest E. Clark. (B. T. Batsford.) 5*s.* net.—Intended to guide students preparing for the Government examination in memory plant-drawing and design, this volume contains 100 plates of line drawings of plant forms—especially English wild-flowers—selected because of their suitability for decorative treatment. They are, without exception, not only accurate and extremely beautiful, but also full of artistic suggestion. An introduction of six pages gives valuable hints on the principles underlying the application of plant form to design. All this is so excellent that occasional lapses in the descriptions of the plants seem particularly unfortunate: they might so easily have been avoided had a botanist glanced over the proofs.

Mathematics.

A New Trigonometry for Schools. By W. G. Borchardt and A. D. Perrott. viii. + 400 + xiii. (Tables) + xxviii. (Answers) pp. (Bell.) 4*s.* 6*d.*—Part I. was noticed in THE SCHOOL WORLD for September (p. 360). It may be mentioned, as bearing on a matter referred to in that notice, that an appendix to the complete text-book discusses very clearly the methods of using seven-figure logarithms. The second part begins with two well-written chapters on the properties of triangles and polygons; these are followed by chapters on general values of angles with the same sine, &c., submultiple angles, and inverse functions. The space given to submultiple angles might well have been curtailed in order to give more careful statements about inverse functions; if the student follows the advice to consider only the principal value, then he will find many of the formulae to be incorrect. Chapter XX., on Inequalities and Limits, is a very good one, the treatment being decidedly fresh. The chapters on the exponential theorem, De Moivre's theorem, and the expansions of sin. x. and cos. x. are sufficient for a first reading; a good feature is the application of the series to the calculation of the functions in particular cases and to the solution of equations. When full justice is done to arithmetic in the higher branches, more attention will be paid to the degree of accuracy in the values obtained. The book is provided with excellent sets of exercises, and, though probably capable of improvement, is a worthy addition to school literature. An interesting appendix on the slide rule adds to the value of the work.

Elementary Trigonometry. By C. H. P. Mayo. xvi. + 204 pp. (Longmans.) 3*s.* 6*d.*—The arrangement of this book differs in many respects from that usually followed, and is, we think, a decided improvement. No fictitious importance is attached to the acute angle, but, from the outset, angles of any magnitude are considered, though attention is specially directed to such angles as occur in the ordinary elementary applications. Part I., entitled "Practical Trigonometry," is an excellent piece of work, and is well within the reach of beginners; from personal experience we can say that the method here adopted has proved thoroughly satisfactory. Part II. follows more closely the usual lines, and contains as much as is required for ordinary school use. The book deserves the careful consideration of all teachers in search of a work on trigonometry that will meet the needs of the average schoolboy who can draw figures and do calculations, but who is not ready for the manipulation of formulæ required in the treatment of identities and in analytical trigonometry generally, though some practice in analytical work is also furnished in the latter part of the book.

A Geometrical Political Economy. By H. Cunynghame. 128 pp. (Clarendon Press.) 2*s.* 6*d.* net.—To complete the title of the book we should add, "being an elementary treatise on the method of explaining some of the theorems of pure economic science by means of diagrams." The diagrams are, in fact, graphs, though the author in the preface seems to suppose that the word "graph" is not used "when a law can be discovered governing the form of the graph"; but one of the chief values of a graph for practical purposes is to suggest a law, though doubtless the expression of the law in the case of economic facts will be somewhat different from that in the more usual applications. However that may be, the book ought to be in the hands of every student of political economy; the presentation of the graphical method is exceedingly clear, and should be well within the comprehension of anyone who studies the science of economics. Teachers might get many hints from the book for usefully applying graphic methods in the schoolroom.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Education and Status of Women.

MAY I thank Camilla Jebb for her broad-minded contribution on the education and status of women? I am specially grateful to her for supplementing certain *lacunæ* in my *Pall Mall Gazette* article by recording the remarkable progress already accomplished. I must plead guilty to the charge of having drawn a blank cheque on the future rather than posting up the credit account of the sex as it stands to-day, but I in no wise regret having done so, because I feel it will be duly filled in and honoured by women once the proper time has arrived. On the other hand, I must confess that I am absolutely contumacious in persisting in my somewhat qualified appreciation of many types of the women of to-day—modern I will not call them, they are rather an unstable amalgam of the old and the new, shall I say "'hers' ancient and modern."? *Le mieux est toujours l'ennemi du bien* and discontent with the average condition of things is one of the laws of progress. As a matter of detail I may mention the lady guardian I cited does not come

out of the jokes column of a newspaper, but lives within a hundred miles of my own home. That, however, is of little account. The point I wanted to illustrate, and many women have acknowledged its truth, is that while all men are not immaculate in refraining from making public questions a matter of a sort of personal vote of confidence, women are still less able to keep the personal element out of their public duties. It is, in fact, a question of proportion. If, say, 30 per cent. of the men are not free from this weakness, at least double that percentage of the women are similarly afflicted. I hope I do not seem to be blaming the women. They have not had a tithe of the men's experience; how can we expect them at once to become their equals in this respect? Again, two blacks do not make one white, and surely the wise woman will not wait till we have discarded the unsightly chimney-pot hat in order to reform her own dress. As regards long outdoor skirts, lady friends assure me that while a certain number of women are wearing short skirts out of doors, either for fashionable or hygienic reasons, the "trailer" is still much in evidence; and what will happen when the fashion changes?

As regards the education of women by women, the whole point seems to me to lie in the question of aims. What type of woman do we want to produce? Then we can take up with advantage the second question, how can we best produce her? Until recently we have always been squabbling about the teaching of this or that subject, whereas its suitability should never depend on whether it is apparently a desirable thing in itself, such as Greek, but whether it is a suitable ingredient in the curriculum requisite to produce such and such a type of student, be it boy or girl. We want, in fact, in women's education, an explicit statement of aim. Let me take my own personal opinion to illustrate what I mean. I presume the aim of woman's education should be to turn out strong, healthy women, potential mothers and housewives, filled with civic aspirations, with power to earn their living should they be called on to do so. Some of our most prominent lady educationists at the British Association meeting at Southport made a distinct claim for girls' education to be differentiated from that of boys between the ages of fourteen and sixteen. It was very remarkable to notice the dead set made against co-education, which was regarded at best as a sort of *pis aller*. In fact, the undertone of the whole discussion seemed to be that while women should be treated as the equals of men, they must by nature remain profoundly different. It would be most instructive to learn if such an expert as Camilla Jebb would go quite so far. Some of us still think that while, where possible, boys and girls should have separate schools, they might in certain subjects receive a training in common.

May I in conclusion point out what appears to me still the weak point in the education of the emale portion of the nation? While the Girls' Public Day School Company and other similar institutions have done, as Miss Jebb rightly insists, an enormous amount to popularise among teachers and girls the old-world sense of *esprit de corps*, I doubt if they have sufficiently developed the modern conception of responsibility to the community at large. Again, there is unfortunately a large class of girls whom these schools to a certain extent fail to reach —namely, the daughters of the upper classes. These are still, for the most part, educated at home by governesses or at fashionable schools in which the traditions of the "seraglio" are still largely perpetuated, and the sense of *esprit de corps* or of civic duties is hardly cultivated at all. Yet these girls, belonging as they do to the *classe dirigeante*, are going to be in the future the natural leaders of women in a thousand ways. It seems until we can induce the parents of such girls to send them to some public institution, they will never acquire the civic virtues which are becoming quite as necessary for women as for men to-day. What we really want is a committee of patriotic peeresses to start an Eton or Harrow for girls belonging to the highest classes, staffed with the flower of Oxford and Cambridge women. That would do more than anything else to help women forward on the road towards intelligent independence of, or rather of interdependence with, man. For is not interdependence the truer ideal, that co-operation and working together in common that Camilla Jebb so eloquently preaches at the end of her article?

As for the education of our own sex, she might very well have urged that we too have much to alter. Somehow or another we must free ourselves from the dead weight of Philistinism which still oppresses English public schools no less than English society. The average Philistine is all too predisposed to look on woman as fit, in Iago's words, for little else than "to suckle fools and chronicle small beer." We have got to raise the intellectual level of our schools if we are ever to produce in the rank and file an intelligent appreciation of the great potentialities of the woman of the future.

CLOUDESLEY BRERETON.

Meteorological Observations in Schools.

METEOROLOGY is one of those sciences in which it is quite impossible to control the circumstances in which observations are made. This was pointed out by Prof. Schuster in the address which he delivered to the British Association subsection for Cosmical Physics in 1902. In order to obtain results on which a science can be founded the accessory circumstances which are beyond our control must be eliminated. This can only be brought about by a large number of observations being made with regularity. A considerable increase in the number of stations at which observations are made is very desirable, and it is on this ground that a plea for the establishment of school stations can be upheld.

Many difficulties are encountered in establishing a second-class station at a day school; amongst these are the observations to be taken at 9 p.m., the weekly breaks on Saturday and Sunday, and the holidays; the last two, of course, interfere with the continuity of the observations. A greater difficulty than any of these is, perhaps, the expense to be incurred in procuring the required apparatus. These difficulties could, however, be removed almost entirely by the inauguration of a special class of school stations. If it were recognised that each school should have a meteorological observatory, the expenses would be met without demur by the school authorities, and if arrangements could not be made to take the required readings during the holidays it would still be worth while to make observations during term.

The observations, valuable in themselves, are also of considerable educational value. The boys themselves should make all the required readings. This secures the interest of the boys in meteorological observations, and may lead to the establishment of many private stations in the future, while the readings themselves can be treated in such a way as to make them of much value from the teacher's point of view.

Some observations are more particularly suitable for schools than others. It would, however, be advisable that all school stations should make the same set of observations, and to secure this the authorities at the Meteorological Office might in some way try to discover the general opinion on this point amongst teachers themselves. Observations which seem suitable are:—Temperature readings (maximum and minimum, wet and dry bulb, thermometers), the rainfall, the barometric height, the amount of cloud and its kind, the force and direction of the wind. These observations have been made at the Bridgend County School for the last two years.

which can be adopted with considerable success is
h separate observation to a separate boy. The
as soon as they are made, should be entered on a
pared sheet of paper kept in some central position.
le to get each boy to keep a private record of his
rm of a graph. This helps to sustain the interest.
of the wet and dry bulb thermometers can be used
ew point, and the humidity of the atmosphere, with
Glaisher's tables. At the end of each month the
ich observations as lend themselves to this method
can be found, while all the readings can be com-
ich other, and any connection there may be between
whether accidental or not, can be discovered and
h the observers. The graphic records are particu-
or this purpose.
ewhat doubtful whether it is wise to estimate the
wind without an anemometer, but its direction and
ection of motion of the lowest stratum of clouds
served. The interest of the observers is consider-
re has been no difficulty in securing observers for
; one or more of the observers usually volunteers to
ie task, which of course entails a special journey to
ich day at 9 a.m.
ability of establishing such stations can hardly be
ed, and their worth both to the teacher and boys, as
the science of meteorology, would, I believe, be

W. A. WHITTON.

xiliary Language for International Use.

a kindly permit me to give some information to
iring to investigate the progress made by Esperanto
fessors of languages abroad. It is not, of course, a
he thought of business men, men of science, and
the 20,000 addresses of men who approve, which
ie, answer that. But teachers really desiring to
y must have names and addresses. The great diffi-
to select, for in France alone, in fifty large towns,
lycées and colleges are giving lessons either pub-
ately; so I can but append the names of seven who
, fairly representative professors.
aching books are published in more than one lan-
aps the most noteworthy is the "Cours Commercial
)," published by Leon Marissiaux.
st impossible to express the astonishment of teachers
Germany, &c., when we have to tell them that the
eachers in Great Britain who have identified them-
Esperanto can be counted on the five fingers of one

sion, may I add that the British Esperanto Associa-
ed October 14th, 1904, has twenty-five affiliated
he Secretary is Mr. Harold Clegg, 14, Norfolk
nd. Amongst professors of languages teaching
re:
f. Bourlet, Dr.-ès-Sc. et Mathématiques, Prof.
eaux Arts, 22, Avenue de L'Observatoire.
M. Saquet, 25, rue de la Poissonerie.
f. Meray, 74, Rue J.-J. Rousseau.
M. Offret, Prof. des Sciences Facultative, 53, Chemin

: Dr. Mybs, 67, Markstrasse, Altona.
: Prof. Massau, 22, rue Marnix, Ghent.
Dr. Ostrovski, Polenkinskaja, ul, Jalta, Russia.

E. A. LAWRENCE.

in Road, S. Wimbledon,
ember 5th, 1904.

A Working Library of General History.

MAY I add a brief footnote to my bibliographical article in your November issue? It is rather difficult to keep such lists "up to date," and a good many books have been published since I compiled this particular list. The following three recent books imperiously claim a place in even the smallest "Working Library of General History."

(1) *Historical Sources in Schools: a Report to the New England History Association.* (The Macmillan Co.)—This is an excellent book absolutely indispensable to the well-planned school library and to any teacher whose lessons include any branch of history—ancient, modern, British or American. It is a good example of the kind of select explanatory bibliography so convincingly advocated by Mr. H. G. Wells in his "Mankind in the Making."

(2) *An Introduction to the History of Western Europe.* By J. H. ROBINSON. (Ginn.) *7s. 6d.*—This is the only satisfactory book known to me which includes mediaeval and modern history (but *not* ancient history) within a single pair of covers. Those who prefer to keep ancient history quite separate from general modern history might use this book as a substitute for Prof. G. B. Adams's "European History," recommended in my list; but it would serve more properly as a supplement than as a substitute.

(3) *Readings in European History.* Vol. I. Edited by J. H. ROBINSON. (Ginn.) *7s.*—This is the first adequate source-book of general history (the first volume extends "from the breaking up of the Roman Empire to the Protestant revolt"), and at once joins the source-books of English history edited by Professors Colby and Kendall as indispensable to the teacher of history—whether he be, from a historical point of view, expert or layman—and to the well-equipped school library. If only our school examination authorities would insert in their regulations for senior candidates at least "credit will be given [this formula might stave off cramming and specially annotated editions] for acquaintance with such of the original sources of the period as are included in the source-books of Colby, Kendall, Powell, Robinson and Warner," what a stimulus would be given to the *real* study of history in our schools!

Perhaps I may also be allowed to say that anyone interested in the subject will find a somewhat fuller list of books bearing on general history (about three times as long as that in THE SCHOOL WORLD) in my "Student's Note-Book of European History, 1789-1848" (Heffer, *3s. 6d.* net), which will, I hope, appear before Christmas.

I must also point out that the Editor of the Cambridge "Lectures on the Nineteenth Century" should be "*Kirk*patrick," not "*Fitz*patrick."

J. S. LINDSEY.

Association of Teachers in Technical Institutes.

AT a largely attended, representative meeting of teachers from London polytechnics, technical institutes, and schools of art, held at the Birkbeck College on October 22nd, Mr. W. J. Lineham (head of engineering department, Goldsmiths' Institute) in the chair, it was decided to form an Association of Teachers of Science, Art and Technology, engaged in the institutions mentioned above, such association ultimately to extend its membership to institutions in the provinces.

A temporary committee, consisting of Miss Bramham (Northampton Institute), Miss Maxlow (Wandsworth), Messrs. Bates (Brixton), Baxter (Bolt Court), F. Churchill (East London), J. B. Coleman (South-western), P. Coleman (Northern), G. Draycott (Borough), W. Grimwood (Westminster), G. Harrop (St.

Bride's), W. J. Lineham (Goldsmiths'), C. F. Mitchell (Regent Street), G. Paley-Yorke (Poplar), S. Starling (West Ham), W. Walters (Hackney), and J. Wilson (Battersea), was appointed to draw up rules and constitution, and to report to a meeting to be held in January, 1905. A temporary subscription was fixed, and members were enrolled.

J. WILSON, *Hon. Sec. pro tem.*

Battersea Polytechnic, S.W.

Studies on Hesiod. No. II. The Shield of Hercules.

"YOUR Reviewer," whom I do not care to follow, has mistaken my references. Let me only say, as Mr. Balfour about his speeches, "please to read the pamphlet itself, and not the comments of perhaps hasty criticism." Theories, which do good work as pioneers, certainly until they are verified, must not be surprised if they get cried down; mine, however, has this amount of verification already, that it makes the epithets in Hesiod at once to have meaning. Hesiod, great and true poet, was certainly himself a moralist, as witnessed by his well-known apophthegms; or, to go no further, by his beautiful opening lines (l. 10, &c.) of "Works and Days." Without keeping moral considerations well in the mind, how could Hesiod be profitably studied?

Steepleton Rectory, W. F. CORNISH.
Nov. 7th, 1904.

I CORDIALLY endorse Mr. Cornish's advice. Read the pamphlet, and then *securus iudicet orbis terrarum*.

YOUR REVIEWER.

MUTUAL AID.

THE object of these columns is to afford teachers the opportunity of asking questions of and giving assistance to colleagues. The questions received to which replies are solicited will be printed first; following these will be the answers which have been sent in, and, to make such replies intelligible to all readers, they will be accompanied by the question.

Readers are invited to send answers to any of the questions asked below by our correspondents.

The questions should deal only with educational matters, using the expression in a broad sense, and the publication or otherwise of any question must be left entirely to the discretion of the Editors.

Questions and answers should be addressed to the Editors of THE SCHOOL WORLD, St. Martin's Street, London, W.C., and should be accompanied by the full name and address of the sender, though not necessarily for publication. Each question or answer should be on one side only of a separate sheet of paper.

QUESTIONS.

F. L. L. Can any reader tell me (*a*) what is the best wax to use for coating "home-made" lantern-slides; (*b*) how to ensure getting a thin even coating of wax on the glass?

C. M. J. Where can I obtain cheap five-figure mathematical tables, containing logarithms and the natural and logarithmic trigonometrical functions?

The only five-figure tables I know contain far more than is needed for school work, and are consequently too expensive.

J. G. R. Who is the publisher and what is the price of Woodward's "Crystallography for Beginners" mentioned in THE SCHOOL WORLD for October, 1904?

QUESTIONS WITH ANSWERS.

C. H. C. *Will any schoolmaster who has taken up some branch of practical work, such as Electric Lighting, or any work which might prove profitable on compulsory retirement from teaching, give your readers the benefit of his experience?*

A. E. M. Although the writer cannot claim to be in the position desired by your correspondent, he took a holiday some years ago as a "hand" in a corporation lighting station in order to bring his laboratory knowledge a little more into touch with practice. To become a successful electrical engineer a good training in mechanical engineering previously is most desirable, if not essential. The responsibilities are often great, and many occasions arise which call for the exercise of quick initiative which entails an intimate knowledge of details. Valuable posts in this department of electrical work certainly exist, but are only obtained after a passage through the junior stages, in which the remuneration is not high. A station may possess perhaps three junior engineers working in eight-hour shifts in rotation. Such posts carry with them during duty the entire control of the plant and staff, and many cases exist in which the salary does not amount to £200 a year, and such posts are generally filled by men under thirty.

If your correspondent possesses a little capital and a good deal of business capacity, some post in a firm dealing with electrical "sundries" will be open to him involving much less training, but, unless he is fortunate in the choice of his firm, he will find many trade dealings which make a conscience established on broad lines a distinct financial asset.

* * * * *

W. J. T. *Would some reader, with experience of school dramatics, suggest some plays or portion of plays suitable for production in a mixed school?*

C. M. WALTERS. W. J. T. may possibly find my experience useful, though limited. I produced the first four acts of "A Midsummer Night's Dream" with considerable success in a mixed school. It does not demand great acting powers from one member of the cast, as do most of Shakespeare's plays, and with good dressing requires no scenery. We also did on a somewhat less elaborate scale the chief scenes from "She Stoops to Conquer." I imagine, but have not tried it personally, that "The Rivals" could also be done in parts. A "chorus" to tell the story connecting the scenes is by no means as inept as it sounds.

If you can find a boy for Shylock, no play is so popular as "The Merchant of Venice."

* * * * *

J. W. *Can you tell me where I may obtain a copy of the monthly paper published in Esperanto, which is mentioned in the article on Esperanto in the November issue of* THE SCHOOL WORLD?

EDS.—See the letter by Miss Lawrence (p. 483).

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All contributions must be accompanied by the name and address of the author, though not necessarily for publication.

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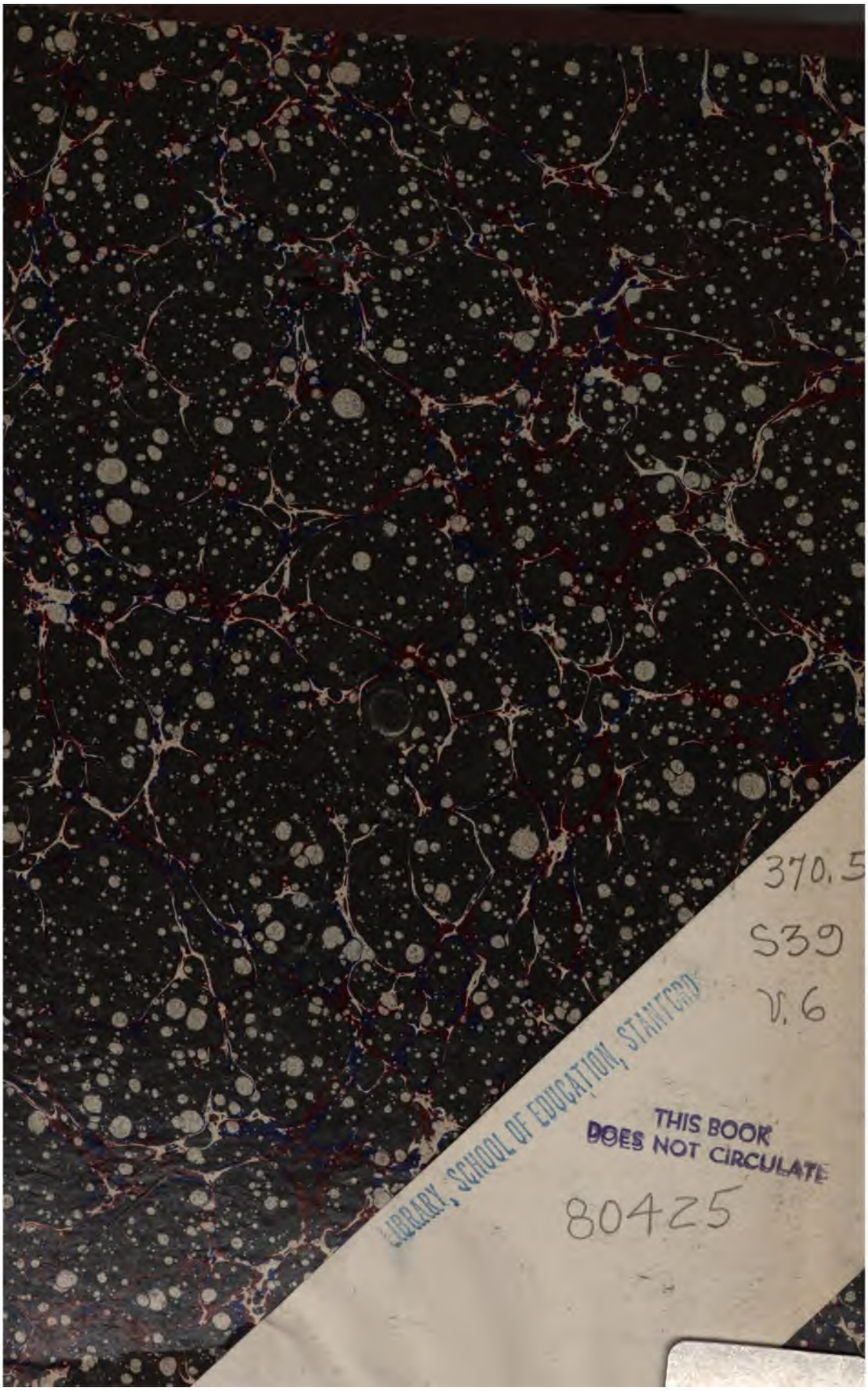
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